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"London Streets and Buildings" Bill.

WE have already dealt with the main drift of the Bill, page 461, in our last volume, and given it a kind of second reading, thinking there is reasonable promise of a useful Act. We have, however, suggested that there are slips of the pen, defects in wording and vagueness where definiteness would be better; also that there are points about which strenuous argument would be desirable. In order that the main provisions may be thoroughly understood by all, without everyone going through the labour of the study, we propose to deal with some of the more important subjects in separate form and at very moderate length, pointing out what is now proposed by the London County Council, the changes from the existing law, some reasons for the changes, and reasons against them when necessary. It is quite possible to have too much of such a subject all at once, but for some amount of correspondence we shall be happy to find room. In legislation it is quite as necessary to know what people actually think, as to know what they ought to think, or what would, in the abstract, be the best thing for them. The Act, when passed, will most probably remain in force (except as amended) for at least twenty years, and should for every reason start accepted as a model in drift, framework, and all details. Those interested in London and its buildings should take pains to mature and express their views, now they have a definite text before them. We had better submit a little longer to the ills we have, rather than that Parliament should hurriedly pass something or other. There was little choice in 1855; the deadlock itself would have justified speedy legislation; things could hardly be made worse by a stop-gap. The shapeless, somewhat incoherent measure has done duty for nearly forty years. It would probably not have ranked higher than the Act of 1774 if the Bill of 1870 had passed into law; now it will have all the honours accorded to anything of long standing. There is now no run against time. The proposed measure should reach the building world by easy introductions. These may help the way to a cheerful acceptance of the situation, and to the new Act being received as pleasantly as may be, and never regarded as an unpleasant step-mother, compliance with whose requirements would be against the grain.

It was suggested at the R.I.B.A. meeting on December 4, when some Building Act matters were touched upon, that "it would be better to have the definitions so fixed that they could all understand what the Act meant, instead of requiring a tribunal to appeal to at all." Whether the remark was meant seriously we cannot say; but we do not think an Act devoted to meeting every possible case would be likely to prove a good working one. In the preamble to the proposed Bill the existing law is credited with "provisions complicated and in some respects doubtful." It is not clear what "doubtful" means, but the whole means something not quite respectful to parts of it. "Complicated and doubtful" provisions should certainly be avoided as much as possible; but the application of the best possible clauses, to the special cases which will come up, will be sure to give rise to difficulties. Acts which provide for very many exceptions are almost useless; ingenious persons will work hard at the destruction of the remainder, and succeed very well when magistrates only half understand the differences between the cases they are called upon to decide.

In interpreting the Act the Tribunal of Appeal, the magistrate, and the judges will have the help of a preamble, in which the objects aimed at by Parliament are stated in some detail. This kind of help has not been available of late years. The Act of 1774 had a sturdy little preamble. The Act of 1844 had a somewhat elaborate one. The Act of 1855, the main Act still in force, though supplemented by half-a-score of other Acts, had the most meagre of possible preambles. It was simply stated that it was expedient that the laws relating to buildings in the Metropolis and its neighbourhood should be amended; and no reasons were given to account for the actual enactments. It has, in consequence, been argued from time to time that, there being no preamble, the exact wording is the only possible guide. Sometimes the argument is carried still further, and it is contended that a reading, although directly antagonistic to the supposed purposes of the Act, should be accepted unhesitatingly—if the weight of the wording in the Act is not clearly against the defendant, in a District Surveyor's action. In support of this view it is pointed out that it is apparently impossible to account for some of the decisions by magistrates and judges in any other way.

The often-quoted statement that "the preamble is a good mean to find out the meaning of the statute, and is a key to open the understanding thereof," is probably as true now as when it was given out; that is, if the preamble is a really good one with full comprehensive wording, not one in which the desire of brevity has resulted in obscurity. In the following ampler authoritative exposition of the use of a preamble, it is laid down that the meaning of the Legislature should only be sought in the preamble when there is any ambiguity in the existing part; and it is delicately implied that if all the aims are not fully stated in the preamble, the decision will, when the preamble is so consulted, not go beyond what can be deduced from the aims which are clearly stated.

"The Court ought to give effect to the preamble to this extent, namely, that it shows what the Legislature are intending; and if the words of enactment have a meaning which does not go beyond the preamble, or which may come up to the preamble, that meaning should be preferred to one showing an intention of the Legislature which would not answer the purpose of the preamble, or which would go beyond. To that extent is the preamble material.' (West Ham [Overseers] *v.* Iles.)

The preamble of the proposed Bill states as mentioned before, that the present Acts are in parts unsatisfactory, and that their repeal is desirable; also that "further provisions should be made and powers conferred in order to secure a proper width and direction of streets, the sound construction of buildings, the diminution of the danger arising from fire, the securing of more light, air, and space round buildings." . . . Now, as a permanent guide to the main intentions of the framers of such an Act, such a preamble is manifestly incomplete, and though the succeeding clause—

"And generally with respect to the control and regulation of streets and buildings, and otherwise as in this Act set forth"—

is a pretty sweeping one, it throws no additional light on intentions. "The utmost possible encouragement, and the least possible hindrance to intelligent new building"; "the fair adjustment of the rights of the joint owners of party structures"; and similar sentences, would look well in such a preamble, and might have good effect. In the preamble to the 1844 Act, "to increase the Expense, and to retard the Operations of Persons engaged in building" were mentioned unfavourably. Parliament is to be asked (sec. 136) to give authority to the Council to make by-laws with respect to "relaxation or adaptation of various provisions of this Act in their application to special or exceptional cases." We shall in time see what this can be made to mean. It is a very elastic provision as it stands, and might be kept in rightful course by other words from the preamble to the 1844 Act, ordaining that there may be exercised "in certain Cases, and under certain Checks and Control, a Discretion in the Relaxation of the fixed Rules, where strict Observance thereof is impracticable, or would defeat the Object of this Act," or would needlessly affect with Injury the Course and Operation of this Branch of Business."

Of course minor subjects do not deserve to be named in any preamble; but, once started, a good ample range is logical and desirable. As a whole generation, if not more, will, no doubt, be bound in the fetters now being forged, we should not now object (and later on no one would object), to the introduction of the idea of "amenity" into the preamble. Wide streets, removal of dilapidated and neglected structures, limitations in the height of buildings, the prohibition of sky signs, the limitation of advertisement—quite a number of regulations for the promotion of comeliness and propriety—have their places in the proposed Bill. But the reasons for them are not generally stated, though occasionally hinted at to a reader between the lines. For instance, neglected structures, ruinous and dilapidated, unfit for use or occupation, when from neglect they reach "a structural condition prejudicial to the property or to the inhabitants of the neighbourhood" (Sec. 97), may be dealt with effectually. The Third Schedule arranges for "local evidence to satisfy the magistrate that the condition of the property is prejudicial, &c." It will be possible to glean from this that a neglected structure is not always regarded by the Legislature as an agreeable object. But why is it necessary to take pains to show, or affect, any indifference, in a Building Act, as to London's being a good-looking, pleasant place?

THE LATE M. CÉSAR DALY.

MANY of our readers will learn with regret of the death of this veteran French architect and architectural writer, who only eighteen months ago received the Gold Medal of the Institute of British Architects from the hands of its President, and acknowledged the honour in probably the most remarkable extempore address which had ever been heard in that room; and who died at his country residence at Wissous, a few miles out of Paris, on the 11th of this month, at the age of 83.

At the time when the Institute medal was presented to M. Daly a good many particulars as to his life and work, embodied in the address of the President of the Institute, were printed in our columns,* and in devoting a few words to his memory here we may avoid recapitulating details so recently given, and endeavour rather to add to these some personal recollections of his character.

César Daly, who was born at Verdun in 1811, was the son of an English officer who was a prisoner of war in France, and married a French lady. The name Daly, however, as everyone knows, is an old Irish one, and César Daly always maintained that he was Irish by descent; and one traditional Irish quality he certainly exhibited in that power of fluent oratory which he possessed in so remarkable a degree. As mentioned in the Presidential address before alluded to, Daly spent the years of his boyhood in England, and retained the habit of speaking English so much during his life that at one time, his sons being also taught English well, there was more English than French spoken in the home circle; though latterly this was not so.

The main points of César Daly's professional education, at the École Polytechnique and subsequently under Duban, we have before recorded. His actual work as an architect was not extensive, the restoration of the Cathedral of Alby, to which he was appointed in 1840 under the Department of "Monuments Historiques," being his chief work of this kind. A number of drawings of this building and its restoration were exhibited by him at the Salon of 1846 and the general exhibition of 1855, where he obtained a "Seconde Médaille" for them; and he was named Chevalier of the Legion of Honour in 1861. He was for some months principal secretary of the Societé Centrale des Architectes, after 1848, but did not attend the meetings very often. The fact was that he was of too restless and energetic a spirit, and took interest in too many different subjects, to confine himself within the regular lines of professional practice. But he found an admirable outlet for some of his best powers in the architectural periodical, the *Revue Générale de l'Architecture*, which he had founded in 1839; a folio periodical which would have been called a monthly one in England, but which appeared twelve times a year with that easy-going irregularity as to stated dates which the habits of French periodical literature seem to allow, and which has its advantages as well as its disadvantages. The establishment of the *Revue* coincided to a great extent with the commencement in France of the "romantic movement" in art. It was published at first by Paulin & Hetzel *père*, the publishers of *L'Illustration*; after 1843 it was published for some time by the editor himself, then successively by the houses of Morel & Cie., Ducher & Cie., and lastly by that of André Daly *fils* & Cie. In its earlier days the *Revue* was more devoted to scientific, archæological and historical subjects, and less to illustration, than in its later days, when the illustrations of contemporary architectural work became an important feature, and were produced with an excellence of method and execution which has never been surpassed. Picturesque illustrations in perspective, so popular in England, were not much represented in the *Revue*, which rather favoured finely-drawn geometrical elevations and detail drawings. It became also the recognised organ for the expression of opinions on architecture among the leading men of the day who were interested in art, such as Viollet-le-Duc, Prosper Merrimée, Albert Lenoir, Beulé, Comte de Laborde, Constant-Dufeux, Ruprich-Robert, and others. The literary portion of the *Revue* was still mostly occupied with articles on what may be called the "higher criticism" of architecture; and it was in order to provide for the consideration of more practical subjects that the excellent weekly publication, the *Semaine des Constructeurs*, was started, conducted by César Daly in conjunction, either at first or afterwards, with his son M. Marcel Daly, under whose editorship the *Semaine* still continues its course. The *Revue*, which was essentially a personal production of César Daly, appears to have been allowed to drop two or three years ago, when its founder became unequal to the constant strain of keeping it up to its original level; it was perhaps too personal a work to be well carried on by anyone except its originator. It was characteristic of the energy of its editor—characteristic also of the French interest in art even in the most untoward circumstances, that the work of the *Revue* was kept up, and the periodical issued as usual, during the whole of the terrible period of the siege of Paris in the Franco-German war.

César Daly's most important architectural publication next to the *Revue*, was his fine illustrative work "Motifs Historiques," consisting of a collection of splendidly engraved examples of the various styles of the French Renaissance, taken from existing examples mostly in Paris, and valuable also as preserving a record of many old features of Paris architecture of the fifteenth, sixteenth, and seventeenth centuries. Some of these have already perished, and others doubtless are destined to follow in the course of modern Parisian improvements. To this work we devoted an article in the *Builder* for March 16, 1889.

Daly was a man of remarkable energy of mind and body, as may be judged from the fact that in his eightieth year he planned and made every arrangement, financial and otherwise, to found and carry through a dictionary of architecture on a scale of completeness such as had never before been projected. His one physical weakness was a tendency to bronchial illness, which in latter years especially made the state of the weather a very important factor in regard to his health and his capacity for work; and it was probably the recent cold, which was severely felt in Paris and its neighbourhood, which was mainly instrumental in ending his life. Apart from that influence, he was always in activity; a great traveller, with a resolution as far as possible to see all things for himself; and we remember the late Mr. Godwin, who had known him well for many years, remarking, "If you call to see Daly, it is just a toss-up whether he is in bed with a cold, or whether he is away studying the aboriginal architecture of Kamschatka." When his *Revue* was first founded, he made it a special feature of the financial arrangements that a certain sum should be set apart every year for the editor's travelling expenses, as he must insist on seeing everything for himself and not through other people's spectacles; and he had stories to tell of his experiences and adventures in almost every part of the habitable world, civilised or uncivilised, generally with some bearing on art or architecture. We remember particularly a most dramatic account, given in his garden at Wissous one summer afternoon, of his being present at a great function of Red Indians, when the chief of the tribe, standing in the centre of a circle of hearers, punctuated each sentence of his address by a kind of shout, at the same time turning a little so as to face another portion of his circle of listeners, which circle itself turned so as to follow him, till the whole crowd had come to circling round at regular intervals, after each shout; an example, he maintained, of the inherent tendency to form and rhythm in humanity. When exploring in Egypt he astonished the local French officials by his untiring energy, and related with evident enjoyment how one of them, in giving the route to a party for certain temples, added, "but you cannot possibly see them in one day, unless you have *le diable au corps*, like Daly."

It was about thirty years ago that César Daly established himself in the house at Wissous where his friends of recent years knew him. It was, as he himself told us, mainly from the necessity of having more undisturbed leisure for work that he quitted Paris. His genial character and overflowing hospitality (the latter perhaps, like his fluent speaking, a traditional Irish trait) made him more friends than he could find time for, and in the Paris days it was not an unusual thing to have fifteen to twenty guests at *déjeuner*, which, though pleasant, did not conduce to study. In seeking a quiet spot, he could certainly hardly have managed better than he did. It was in 1889, the exhibition year, that we made our first personal acquaintance with the *confrère* (as the French pleasantly express it), with whom we had long corresponded, in response to a

* *Builder*, July 2, 1892.

cordial invitation that we would make Wissous our home during our visit to the exhibition. To say truth, we had to stop in Paris two or three days and do a little steady exhibitionising first, for Wissous was a little too inaccessible for journalising the exhibition from. The railway access to it was by way of the old *Gare de Sceaux*, now advanced into Paris as a new terminus, but then an *ultima thule* to which the Parisian cabmen could with difficulty be bribed to drive one. A slow, stopping train brought one at length to the small characteristically French country town of Antony, with its white-shuttered houses and broad paved streets with not a soul to be seen in them, and a drive in a country omnibus through the bare-looking unfenced country to the little hamlet of Wissous, with its odd little Late Gothic church. Adjoining the village our friend had found an old French country house, which he had altered and added to, putting a grille flanked by exactly symmetrical lodges towards the little street. Inside this a courtyard gave access to the double ramp of external stone steps leading up to the house door, and on the other side of the house was a large garden, laid out when what were then called "English gardens" were the fashion in France, with winding walks, shrubberies, a "wilderness," clumps of trees, and a little artificial "mount" near the extremity, whence Paris, on clear days, just asserted itself in the shape of the outline of the Eiffel Tower in the distance. On the first floor our host had his suite of rooms, forming a library, packed as close as they could with every sort of book on architecture. No place could be more quiet, no seclusion more complete. Of the kindness we received from host and hostess this is not the place to speak, but both visitors (for we were two), remember it as one of the happiest weeks in their life.

This home of study and leisure combined suffered sad havoc during the Franco-German War. There was no staying there, and all that could be carried into Paris was conveyed away, and the house left to become the quarters of a troop of German cavalry. When the owners returned after the war, scarcely more than the shell of the building was left. All the doors and windows had gone, the very frames torn out of the walls, and the flooring boards even torn up in many places—of course for firewood. One incident of the occupation our host told with much enjoyment, though the laugh was against himself. He had buried all his valuable store of wine very artistically in the garden, making up the ground very carefully over it. The gardener, who had his own little stock of *vin ordinaire*, followed this example, but unfortunately did not perform the burial so carefully, and one of the enemy's horses put his foot through the turf into the gardener's claret-bottles. On this hint the whole garden was diligently trenched across, and the whole stock of wine discovered and looted. We heard much from our host about his experiences in Paris at the time, and some of his remarks were curiously illustrative of the matter-of-fact way in which revolutions are regarded in France. When the Commune insurrection broke out M. Daly was away from Paris, and hearing what was going on from a friend who had just come from the city, he merely asked "What is their programme?" "Oh! they have no programme" was the answer, "except general destruction." "In that case we must resist them," he said, "there must be some definite programme"; but otherwise we gathered that he would have quietly accepted the Communist rule in default for the moment of any other form of Government.

The funeral of M. Daly, (a strictly secular one, for the deceased held the general attitude of Republican France towards the church) took place on Sunday, the *cortége* starting from the publishing house of André Daly *fils et cie*, 51, Rue des Écoles, and repairing to the crematorium at Père Lachaise Cemetery, where, after the melancholy ceremony was completed, four addresses were delivered; the first a short written one by M. Daumet, read for him by M. Chas. Lucas as his representative; the others were extempore speeches by M. Guyesse, engineer of the marine service; M. Caumeau, municipal councillor of Paris; and M. de Barral. M. Daumet's discourse we are enabled to give as it was read:—

"Messieurs,

"Je viens au nom des membres de la Société Centrale des Architectes français apporter un dernier hommage à M. César Daly, dont la personnalité depuis plus d'un demi-siécle a laissé une trace lumineuse parmi les artistes el les écrivains.

"Théoricien très alerte, il a abordé des premiers avec succès tout ce qui interessait l'art de bâtir ainsi que les moyens modernes de construction. En 1839, il fondait—et c'est son œuvre magistrale—*La Revue Générale de l'Architecture et des Travaux Publics*. Poursuivie pendant 50 ans, cette publication, la première faite dans la forme artistique et pratique, traitait depuis l'esthétique la plus élevée jusqu' aux problemès les plus usuels de la construction. Cette *Revue*, éditée avec des soins particuliers, accompagnée de planches finement gravées, rendait compte des Concours publics, des applications alors nouvelles à des constructions dont les métaux étaient les éléments principaux; elle propageait avec succès cette idée qu'il était indispensable pour l'architecte, de s'approprier ce que la science de l'engénieur a d'adoptable à la construction des edifices publics et des habitations privées.

"Cette publication a rendu d'importantes services; elle a été l'un des plus surs moyens de propagande des méthodes d'étude de notre art professionnel. Aussi les imitations ont été nombreuses. On peut donc affirmer que M. César Daly a été un précurseur en ce qui concerne les publications relatives à l'architecture.

"Élève du plus éminent architecte au temps de ses études, de M. Duban, M. César Daly ses trouva au milieu de toute une phéiade d'artistes; les tendances de son esprit, son besoin de mouvement, l'engageant à entreprendre des voyages; il les fit lointains et etudie les monuments de toutes les époques.

"Pendant 25 ans, it appliquait sa science aux travaux de restauration de la cathrédrale d'Alby; sa notoriété s'entendait et il devenait membre corréspondant de la plupart des Académies à l'étranger et de nombreuses Sociétés archéologiques; les distinctions honorifiques affluérent, venant temoigner combien ses mérites étaient appreciés hors de France. Enfin l'année 1892 devenait pour lui décisive, il recevait la grande médaille d'or de la Reine d'Angleterre, la plus haute récompense professionnelle dont un architécte puisse être l'objet de la part de l'Institut royal des Architectes britanniques. La Société Centrale des Architectes français joignait à cette occasion son hommage a ceux qui parvenaient à M. César Daly.

"Aujourd'hui, Messieurs, ne pouvant plus ajouter aux éloges que méritait notre confrère, nous nous tournons vers ses fils en leur temoignant, pour Madame César Daly et pour eux, nos regrets d'une si douloureuse séparation."

The editor of this journal desires to add his own expression of appreciation of the remarkable character and breadth of intellectual culture which distinguished M. Daly, in whose death he has also to regret the loss of one of the best and sincerest friends he has ever known.

Besides his widow, M. César Daly leaves three sons: M. Marcel Daly, engineer and architect, and editor of the *Semaine des Constructeurs*, and who is also an expert in electrical work and in French building law; M. Victor Daly, who is a partner in the publishing house of André, Daly *fils*, & *Cie.*, and M. Raymond Daly, advocate in the "Cour d'Appel" of Paris. H. H. S.

NOTES.

THE action of the Committee of the Thames and Severn Canal —otherwise the Great Western Railway Company, the holders of seven-eighths of the shares—in giving notice of their intention to close the greater part of this waterway "for the present," has aroused strong opposition on the part of the various Chambers of Commerce and other bodies interested. The railway company profess to have acquired their interest in the property with a view to preventing its being closed as a navigation, and state that they now find that with the exception of the three-mile section between Stroud and Chalford it is unremunerative. The clause in the Act of 1888 relating to "derelict" canals could be applied in the event of an application for a warrant of abandonment being made, and the Board of Trade will probably endeavour to bring this about should the company neglect to maintain the navigation. The Act provides that "a derelict canal, or any part thereof, may be transferred to any body or local authority," and a member of the deputation which Sir Michael Hicks-Beach introduced to the President of the Board of Trade last week stated that the various bodies interested were prepared to form a trust for the purpose of maintaining the canal, as a part of the through water communication from east to west. In 1888 there were about forty canals, with an aggregate length of 1,436 miles, under the direct control of the railways, but the Act of that year prohibited railway companies from applying any further funds to the acquisition of canal interests, without express statutory authority. In view of the representations so frequently made as to the disastrous effects of railway proprietorship upon the utility of waterways, this would seem to be a very necessary enactment; but it should have been made long before 1888. Canal transport is of great value for many classes of building material and other heavy traffic; and it is certainly against the interests of trade, generally, for existing waterways to be allowed to fall into disuse.

WE have received from Messrs. Woodhouse & Willoughby, architects, of Manchester, a long correspondence on the subject of the competition for the Technical Institute for St. Helens, presented to that town by Colonel Gamble, and thence called the "Gamble Institute." The competition was decided in October of last year, with the assistance of Mr. Hartley, architect, of Liverpool, as assessor, and the first premium was awarded by him to Messrs. Woodhouse & Willoughby, the second to Messrs. Briggs & Wolstenholme of Blackburn, and the third to Mr. Ledger, of London. The committee paid the premiums in accordance with the assessor's judgment, but observed that all the designs sent in would entail a greater cost than the stipulated 20,000*l.*, and invited the three premiated competitors to consider the possibility of modifying their plans so as to reduce the cost. This appears to have been done, and in the sequel the committee preferred the second premiated design for execution. The architects of the first premiated design consider that a great wrong has been done to them, to the profession, and to the assessor. This is another of those cases in which there seems to be such a confusion of ideas as to the powers and position of the assessor. As we have already pointed out in regard to another case, an assessor is an adviser, not a supreme judge; and as we have repeatedly pointed out, it cannot be expected that those who are to pay for and use the building are to exercise no choice in the matter. In the present case it appears that the conditions of competition distinctly stated that "The committee reserve the right to carry out any of the designs sent in, whether premiated or not," those are the actual words; and of course in that case they are acting strictly within their rights. If architects wish it to be a condition that the assessor's judgment is to be final, why do they go into a competition in which it is distinctly stated that it will not necessarily be so? We really cannot see that the committee are to blame, as a matter of conduct; they reserved the right to erect whichever building they preferred, and they are so far following the assessor's advice that they are choosing the one he placed second. They have made a mistake, but since, as we also observed before, assessors are after all not infallible, it is within the bounds of possibility that they may be right in that respect too: we express no opinion on the point, as we have not seen either design. But architects ought really to remember that the people who pay for the building have some rights also.

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THE Admiralty project for strengthening the defences of Portland Roads will involve, if fully accomplished, an expenditure estimated at nearly one million sterling. Messrs. Hill & Sons, of Southampton, take the contract, and the works will, it is anticipated, occupy ten years. The Government propose to first build a chain of piers or bastions in Weymouth Bay, to be connected by "booms" impassable by torpedo-boats, and ultimately to erect in the spaces between the piers a second breakwater, one mile and three-quarters long, to join with the present one, and thus to enclose the Roads. Under an Act of 1847 for the construction of harbours along our coast the existing breakwater was begun in 1849, one year after the completion of that at Plymouth, which Rennie began in 1811. The first engineer was J. M. Rendel; after his death its completion (1871) was entrusted to Sir John Hawkshaw and Sir John Coode. Lying north of the Shambles it consists of a shore end, beginning at the island, 1,700 ft. long; then comes a gap of 400 ft. for sea-way, and then a second portion curving to the north, 6,400 ft. long, and standing in a depth of from eight to ten fathoms at low water. Excepting the pier-heads, and the wall of the shore-end, which are of masonry, it is composed of two unpaved slopes of loose rubble, cast in from the island quarries, the island end carrying a plumb wall, which is founded at low-water level. Rendel is said to have first employed, in 1838, at Millbay, Plymouth, the method of laying *pierres perdues*, which he adopted on a large scale at Holyhead and Portland. The largest stones weighed from five to seven tons, and it is computed that 5,731,000 tons were used,* at a cost of from 348*l.* to 360*l.* per lineal yard, or 1,034,000*l.* in all, convict labour having been utilised. The Moles at Tyre and Carthage, Venice, Genoa, and Rochelle were constructed upon a similar plan of dropping stones into the sea.

THE default by the Manchester, Sheffield, and Lincolnshire Railway in the payment of the interest on the preference stocks is of interest to others than the actual shareholders. This financial collapse renders it altogether improbable that the extension to London will be carried out for many years to come—if, indeed, it should ever be an accomplished fact. The idea is largely a personal one on the part of Sir Edward Watkin, and the scheme cannot be carried out in his life-time. It is, therefore, one which must be relegated to the dim and distant future. But, meanwhile, a large quantity of house property in the Marylebone district has been depreciated in consequence of the proposal to form a terminus in that locality, and as long as there is any possibility of Sir E. Watkin's scheme being carried out, it must influence property in that district. Moreover, the non-completion of the Sheffield Company's undertaking must adversely influence the prosperity of the Metropolitan Railway, and so the public will have to wait for improvements on that line, which are urgently needed. A struggling company cannot spend money except upon actual necessities.

IT is desirable that the case of Briggs *v.* Lucas & Aird, which came before the Queen's Bench Division last week, should not be passed over without some notice. It will make the public better appreciate the contest as to the clause to enable workmen to contract themselves out of the Employers' Liability Act. The action was brought against Messrs. Lucas & Aird by one of their workmen for damages for personal injuries received in the course of his employment, and it was originally tried in the County Court. The jury found that there was no negligence on the part of the defendants, and judgment was therefore given against the plaintiff. The latter appealed, but the appeal was dismissed with costs. If the plaintiff had been in the employment, say, of Messrs. Armstrong & Co., and he had suffered injury, and, as is the case with the workmen of this firm, he had contracted out of the Act, he would have received a sum in respect of his injuries, even though there had been no negligence on the employers' part. True, the amount might have been less than that which he would have received from a jury had he been successful; but then he ran the risk of losing his case, and it is obviously better for a workman to be sure of moderate compensation in any event than of large compensation if negligence can be proved against his employers. Besides, if he goes to law and is unsuccessful he has to pay his own and the defendants' costs, and is, therefore, actually out of pocket by his litigation.

* On an average, one ton of Portland stone measures 15 cubic ft., so it has been calculated that each 20 cubic ft. of the Mole, including the interstices, contains one ton of rubble. (See L. F. Vernon-Harcourt's "Harbours and Docks," 1885.)

AN interesting discovery has recently been made in the Taunus Mountains (a few miles north of Frankfort-on-Main) by the German Imperial Commission for the Investigation of Antiquities. It had been noticed some years ago that in those places where the Limes Trans-Rheanus (a wall of earth bordering on a moat) was changed in character so as to become similar to the Limes Rhaeticus (a stone wall without a moat) there was a small trench running alongside at a distance of about six yards from the wall. This was also found to be the case at Hunheim, in Bavaria, and in other places where, at Mommsen's instigation, a thorough examination had also been made of the Limes Rhaeticus. As a result of excavations in this trench, undertaken at the instance of Herr Jacobi, one of the Government Surveyors, what was evidently the original Roman frontier mark was met with at about 2 ft. below the surface. The frontier was delineated by a series of blocks of stone some distance apart from one another. Underneath these stones were found the various marks of the Roman surveyors. Elsewhere excavations showed that the frontier was marked by other means, such as black earth or wooden pegs.

WE have on several previous occasions referred to the proposed great National Industrial Exhibition at Berlin in 1896. Great progress has recently been made in the organisation of this exhibition, due in a great measure to the interest shown in the scheme by the Imperial Chancellor, Count Caprivi, and the President of the Ministerial Council, Count Eulenburg. After a number of misunderstandings the Municipal Authorities have now appointed a committee to co-operate with the promoters of the Exhibition, whilst the German electrical engineers have done away with a great financial difficulty by deciding at their meeting at Cologne to supply all the light and power necessary as exhibits. Committees are already constituted for each of the twenty-three groups into which the exhibits have been divided, viz.:—

I. Textile Industries.
II. Clothing Trade.
III. Building and Engineering.
IV. Wood-working.
V. Porcelain, Marble, Glass, &c., working.
VI. Dry Goods and Jewellery Trade.
VII. Metal-working.
VIII. Printing and allied Trades.
IX. Chemical Trade.
X. Means of Nourishment.
XI. Scientific Instruments.
XII. Musical Instruments.
XIII. Construction of Machinery, Shipbuilding and Transport.
XIV. Electrical Engineering.
XV. Leather and Gutta-percha Trades.
XVI. Paper Trade.
XVII. Photography.
XVIII. Sanitation and Sanitary Trade.
XIX. Education.
XX. Granting of Patents, Trade-marks, &c.
XXI. Fishing and Marine Industries, Sports, and Pastimes.
XXII. Licensed Victualling Trade.
XXIII. Horticulture.

The guarantee fund already exceeds 150,000*l.*, and up to the present 3,300 intending exhibitors have applied for space, with every prospect of this number being greatly augmented in the near future. The site for the exhibition has not yet been decided on.

THE Bishop of London intends to issue a commission to consider the expediency of uniting the benefices of St. Michael, Burleigh-street, and the Mission Church, Bedfordbury, with that of St. Martin's-in-the-Fields. Bedfordbury, built *circa* 1637, was once an important street; it yet retains two or three old houses, though several have been pulled down during the past fifteen years or so. The church, on the west side, and next to the Hop-gardens, was designed by Sir Arthur Blomfield, the organ being by Hobson, as we read in "Mackeson's Guide." St. Michael's was built in 1833, in the first Pointed style, with a tower and spire, from the plans and designs of Savage.* The organ, by Gray, was restored by Richardson in 1871. Whilst Bedfordbury commemorates the adjacent town mansion of Francis, second Earl of Bedford, Burleigh-street represents that of his no less famed neighbour, Sir William Cecil, afterwards Lord High Treasurer. Cecil House had been built on the site, says Stow, of St. Martin's Parsonage-house and its close, by Sir Thomas Palmer, *temp.* Edward VI. On his attainder, 1 Mary, the property reverted to the Crown. Queen Elizabeth bestowed it upon Lord Burleigh, who enlarged the house, and there, on July 19, 1561, he entertained his sovereign. Nine years later he leased more ground from the Earl of Bedford. Norden describes it as—

> A very fair house, raised with bricks, proportionately adorned with four turrets, placed on the four quarters of the house.

In Cecil House, which, as is commonly stated, remained until 1676, Evelyn was arrested, and for a while confined, for observing Christmas-day, 1657, "the superstitious time of the Nativity." It was the home of the first Earl of Shaftesbury, and the birthplace of his grandson, author of the "Characteristics." Having served during six years after the Great Fire for the Courts of Doctors' Commons, the house gave way to Barbon's Exeter Change, which projected into the Strand at the south end of the present Burleigh-street; and it is said that the two Corinthian columns drawn in G. Cooke's view, with other materials, belonged to the old building. In "Curiosities of London," edit. 1855, Timbs quotes J. H. Burn's statement that at the destruction of the Change in 1830 he saw cut in the stone architrave of the east window "Exeter Change 1670"—an earlier date by a few years than that generally given for its erection. They widened the Strand westwards to beyond Southampton-street. The later Exeter Change, a passage-way between Wellington-street and the Strand, where now stands the Gaiety Theatre, was removed thirty years ago.

IN an article on "bursting boilers" in the last number of the *Lancet* a mistaken statement is made that safety-valves are of no use against the sudden pressure caused by water entering a red-hot boiler. The writer of the remarks, which in general are sensible and to the point, says "A safety-valve will work in cases of gradually increasing pressure; but in the true form of burst boiler the pressure passes from nothing to infinity, if we may be allowed the little exaggeration, and any attempt at valve regulation would be futile." It is natural to think so, but experience has proved the contrary in well-attested cases. There are cases no doubt in which a safety-valve has not prevented the explosion, but it is very possible that in these cases the safety-valve had not been examined for some time, and was not in proper order. It is undesirable that the public should be told that safety-

* See Vol. viii. of T. Wright's continuation (1836) of Allen's "London."

valves are of no use to prevent the bursting of boilers, as they are thus encouraged to neglect a precaution which may and has prevented a serious and perhaps fatal accident. Safety-valves should be examined before each winter by a competent person, to see that they are in proper order; but they certainly should not be omitted.

WE give a short report in another column as to the new conveniences provided by the St. George's Vestry at Marble Arch, and just opened. We much regret to note that in this erection, otherwise an exceedingly good one, the penny-in-the-slot system has been adopted for opening the closets. After the correspondence in the *Times* some little time ago on the serious inconveniences of this system, which were so decisively proved that a large railway company altered all its closets after reading the correspondence (a most unusual concession to press influence on the part of a railway company), it is really stupid and discreditable for the Vestry of St. George, Hanover-square, to have adopted in a large public convenience at a crowded site, a system which has been so emphatically condemned by public experience.

WE are getting a little tired of hearing that the late Sir Andrew Clark said that work is good for everyone and gives more benefit than injury. We suppose that this is the opinion of most sensible people, but the distinction between work and overwork is not kept in view. Nor, what is equally important, is the necessity of doing work under healthy conditions sufficiently appreciated. We should have been glad if Sir Andrew Clark had emphasised the fact as well as that of the benefits of work. The community is not unmindful of this necessity in the case of artisans, as witness the recent inquiry into the condition of workmen in chemical works, but it is somewhat careless in the case of head-workers. There is much need for better ventilation and better sanitary arrangements in many offices, buildings, and shops of all sorts and sizes, and hundreds of cases of ill-health which are ascribed to overwork arise not from that cause but from work in unhealthy buildings, or even because the hours of leisure and sleep are not passed in properly-ventilated and properly-drained buildings. A man's eyes are intended for use, but they will not wear properly through a lifetime unless they are used in a proper light. The clerk who begins to find a failure of his eyesight puts it down to mere use: he forgets the glare of the gaslight which burns in the City throughout the winter above his head in the dark office in which he works. Let physicians preach the doctrine of work as much as they like, but let it be work in wholesome and well-lighted buildings.

THE LOAN EXHIBITION AT BURLINGTON HOUSE.

WE have only space for a few brief notes on the contents of this year's Loan Exhibition, where we met some old friends, as well as new ones. In Gallery I. are two pictures which it is particularly interesting to see. Frederick Walker's "The Plough" (8), now the property of the Marquis de Misa, re-appears on the walls where not so many years ago it appeared as the work of one of the most remarkable of living artists. The picture is as striking now as it was then, and seems likely to hold the place originally predicted for it. Both in general feeling and in the treatment of landscape it is a very distinctly nineteenth-century picture; a landscape, one may say with a "moral tone" about it, never dreamed of by landscape painters till the present generation, to which Walker may be said to belong; and perhaps there is a kind of intensity about it which compares to some extent unfavourably with the calmer and more subdued works around it, but it has its own strong interest nevertheless. The other painting we referred to is Paul Chalmers's "End of the Harvest" (3), a singularly beautiful evening landscape by a painter whose reputation is not of the widest. The same room contains another remarkable work of Walker's, "The Wayfarers" (44), in which the figure of the blind man is one of the finest and most pathetic things he (or anyone) ever painted; the figure of the boy in this picture, like that of the ploughman in "The Plough," seems to show a slightly exaggerated strain after intensity of character, nor is the boy's action in walking quite natural; but it is a memorable work nevertheless.

This first room contains several notable landscapes. We may contrast here Turner's early brown style in "The Trossachs" (10), with the glow and glory of his later style in "Monte Rosa" (25), a morning effect of sunlit mist wonderfully conveyed, and his occasional eccentricity in "Storm off the Forelands" (19), in which it is rather difficult to understand that we are meant to be looking at a stormy sea. In fact, the picture might mean almost anything. Turner painted the sea finely in his earlier days, though more knowledge of ships and of their ways on the water would have been good for him. In the large "Wreck of the *Minotaur*" in Gallery III. (135) the sea seems to be piled in impossible heaps just as the painter wanted it, and the way the raft and people lie on the top of the water is something wonderful and unheard of. The size of the wrecked ship is also a good deal exaggerated for the sake of effect. In Gallery I. is an unusually beautiful work of Richard Wilson's, "The Convent, Twilight" (30), with a very fine treatment of light and evening sky, and a strangely modern sentiment about the whole. Had Wilson painted oftener like this, instead of dissipating himself so much in conventional classic landscapes, he would have left a greater name. A large landscape by Collins, "The Harvest Shower" (37), is a fine composition and an admirable specimen of its school; a school in which composition was more thought of than colour, the scale of colour in fact being for the most part a totally artificial one adopted by the artist to keep nature in her proper place and make her subservient to his scheme. We have vastly advanced in the present day in our perceptions of light and colour in landscape; but there is a breadth and unity of treatment in such a work as this of Collins's which is not without its instructive influence. Not far from this we are surprised by a little gem of Mason's, which we do not remember to have seen before, "Young Anglers" (47), three small figures reflected in a stream.

Among the figure pictures in Gallery I. we have one of the best works of Phillip's, "The Early Career of Murillo" (11), a painting admirably grouped and fine in colour, but somehow impressing one as commonplace. One or two of the figures, the girl looking over the priest's shoulder at the picture for instance, with her vacant stare of surprise, show distinct character; but this is a sort of picture one can imagine being "specially engraved for the *Graphic*," or as a London Art Union "prize." Etty's "Pluto and Proserpina" (14) makes one unhappy, it is so impossible to take any interest in it now; yet as a piece of colour it is undoubtedly fine. But Etty redeems himself in Gallery III., where we meet with his "Sleeping Nymph and Satyrs" (100), which was at a former loan exhibition, we know not how many years ago, and which we then thought, and think still, by far the most remarkable thing Etty ever did: in fact it is so completely on a higher level than any other painting of his we know of, and has such a real "Old Master" kind of power about it, that one cannot understand why, if Etty were able to do anything like this, he should not have done it oftener, instead of repeating his affected figures of nude sirens and others with plaits of hair depending over their faces. The subject is very frankly Pagan certainly; too Pagan, probably, to those who look more at the subject than the painting; but it is a piece of Paganism that Rubens might have been proud of, and has certainly more artistic delicacy, if it has not all the force of Rubens. The large gallery contains, we must confess, a certain number of pictures which are interesting rather for the names they bear than for their qualities; but there are some works of the highest interest and beauty, quite enough in themselves to atone for any deficiencies in the remainder. Among these are Gainsborough's charming portrait of "Mrs. Thicknesse" (101); Vandyck's splendid portrait of "Andrea Spinola, Doge of Genoa" (125), in his crimson robes; Reynolds's "Mrs. Jelf Powys and her Daughter" (128), and his still finer one of Lady Frances Marsham (136), representing as walking in a park—an ideal lady's portrait in its combined grace, freedom, and dignity of action. This has, we think, been at one of the early loan exhibitions, as also Gainsborough's excellent seated portrait of "Mrs. Wallace" (139) and her Pomeranian dog, in which one's admiration is pretty equally divided between the lady and the dog, in the matter of painting. A very interesting picture is that entitled "The Flute-player" (117), which the owner calls Giorgione, but which the Academy call Gian Girolamo Savoldo. Two large architectural paintings by Bellotto, views of Dresden (107 and 122), are exceptionally fine examples of the old school of hard and precise architectural painting.

The Dutch pictures of the year, collected as usual in Gallery II., are not of such interest as in many former exhibitions; but there a few remarkable works. Among these is a wonderful little Rembrandt, "Shepherds and herdsmen resting at night" (91) with an effect of moonlight over the top of a dark hill which is extraordinary, one can scarcely believe it is done by pigments. There are two or three good Jan Steens and a good Teniers; a large portrait by Rubens and another by Mierevelt; two good Cuyps (if Cuyps are good except in a relative sense) and some other works of more or less interest. The early Italian paintings are of more interest historically than artistically.

One room is devoted to a collection of Mr. Pettie's works, which bear very well the ordeal of collection, considering that the subjects are mostly not of very great interest in themselves—we should have been glad to see among them "The Traitor," certainly one of the best pictures he ever painted; we are glad to see "To the Death," (201), the duel with rapier and dagger, to our thinking quite his best picture, and a remarkable realisation of one of the social institutions of a former day. The manner in which the nervous tension of each of the combatants is expressed, the set of their feet on the ground so as to give the utmost grip for a spring forward or backward as may be required, is truly admirable. We have heard the criticism that there is too much canvas for the subject, but it must be remembered that the combatants in such a duel required plenty of space to jump about in; there would have been a feeling that they were cramped if less ground had been allowed them. Among the best of the other works are "Terms to the Besieged" (203), "The Sally" (207), and "Challenged (208).

The exhibition of the works of Stothard, in the water-colour gallery, was one which it was right to make, but we fear it confirms in our mind the opinion we have formerly given expression to, that Stothard was a man greatly over-rated in his own day, and perhaps since, except in one sense, viz., as a book illustrator and sketcher of small scenes. The small sketches at the top of the room, for illustrations to "Clarissa Harlowe" and other works, are almost all charming, and the paintings show very often a very fine feeling for colour. But in proportion as Stothard finished more his defects of draughtsmanship became more apparent. His conception of a scene was often admirable, but spoiled in the working out. Among the paintings those which show him at his best are two or three pictures of a garden subject (a kind of Decameron scene) called "Sans Souci"; "Leaving Home" (205), in illustration of Goldsmith's "Deserted Village"; "Jacob's Dream" (266), a very charming conception; "The Children of Tippoo Saib" (268). We wish his exquisite little "Fête Champetre," with figures dancing under the dark shade of trees, had been here; it showed just what he could do best in painting. The Canterbury Pilgrims is of course a remarkable work in its way, though the horses are very bad; and the replica exhibited here is not the best edition of the painting. Among the drawings, besides the book illustrations, we may draw attention to the fine design of Boadicea (45), a pen and bistre drawing, and to the lovely little sketch of "Cupid and Campaspe" (36), a sort of thing that is like one of Herrick's best poems. Those who do not know Stothard's work of this kind should not omit to look at this collection of his drawings, which are well worth attention, however doubtful one may feel about his oil-paintings.

The small room, through the water-colour room, is occupied by a set of brush reproductions by Blake of his, in some respects, wonderful set of illustrations to the Book of Job. They are not nearly so impressive in this form, however, as in the engravings.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE sixth general meeting of the present session of the Royal Institute of British Architects was held on Monday last at Conduit-street, Mr. J. Macvicar Anderson, President, in the chair.

Death of M. César Daly.

The President said it was with very sincere sorrow that he had to intimate that M. César Daly, Honorary Corresponding Member of the Institute, and Gold Medallist for 1892, died at Wissous, his residence in France, on the 10th inst. at the ripe age of 83. It was so recently and so fully that he (the President) had described his career and works in that room* that it would be unnecessary to make further references to them; but he could not allow the occasion of the death of one whom they respected so much to pass without one or two references. On the occasion of presenting the Queen's Gold Medal to him some eighteen months since, he (the President) indulged in the hope that it might please God to spare for some years one whom they so much admired and respected. The hope had been only to some extent fulfilled. It seemed but yesterday since the dear old man stood there by his side. He delivered an address so full of youthful vigour, energy, and thoughtful inquiry, as to strike everyone who listened to it as being, for a man of his years, a very remarkable performance. He had now gone, but his example remained—a noble example, which he (the President) thought the members might all emulate, for it was an example of a life of constant work, ceaseless, indomitable, indefatigable energy, and of constant devotion to the interests of the art which he loved so dearly. He (the President) felt sure the members would pardon him for having tried to express in these few words what he felt, for he could not but regard the memory of César Daly—alas! that it should be but a memory now—alike with respect and affection.

Some Aspects of the Mutual Relationship of Architects.

The President then delivered the following address to students entitled "Some Aspects of the Mutual Relationship of Architects":—On the first occasion on which it was my privilege to address you I directed your attention to the consideration of what is probably the most important subject to which an architect can devote his studies—the art of planning; for on the successful development of that art depends the daily comfort, convenience, and, therefore, to a great extent the happiness, of the community. Hence it is impossible to overrate the crucial importance of the subject, or to impress it too strongly on the minds of those who, as students, are about to embark on their career as architects. The mistaken idea that such work as planning is not art has led many, who should have known better, to derogate it to a position of comparatively minor importance. He who regards planning as inartistic or unimportant has no claim to be a true architect. When addressing you last year I offered some suggestions in reference to the varied and extensive responsibilities which you will, as architects, be called on to discharge to clients, contractors, artists, tradesmen, and others. I propose now to confine what will be my final words to you from this chair, to one other position which you will occupy—your relationship to the members of your own profession, a relationship second to none in interest, for surely no right-thinking architect can disregard the advantage of possessing the good opinion of his professional brethren in respect alike of his works and of his character.

Master and Pupil.

Let me first touch on the preliminary aspect of this question—the relationship between master and pupil, of which some of you probably have already had experience. Notwithstanding the remarkable expansion of educational facilities in recent years, I suppose the old-fashioned system of pupilage which prevails in this country not only holds its own, but is likely to find increasing favour. In days gone by, when educational facilities—other than those which were to be casually picked up in an office—did not exist, it was perhaps not unnatural that the system of pupilage should be liable to abuse, because the only, or nearly the only, means of acquiring knowledge was from such information as the master might choose to impart. Hence the pupil was to a large extent, if not solely, dependent on the master, and in such circumstances a niggard spirit of exaction on either side would surely conduce to a relationship the reverse of satisfactory. In these later days this is not likely to occur, for the pupil is not now solely dependent on his master for the acquisition of knowledge. The air is full of educational courses, curriculi, syllabi, lectures, and classes, and the remarkable success which many of these have attained demonstrates how much they were needed. The creation and continuing elaboration of such educational facilities has materially altered the relations which formerly existed between master and pupil. It is true that students must to some extent take advantage of such facilities after office hours; but I think that, in receiving a pupil and accepting a premium with him, a master is now bound, not merely to extend to him the advantages of training in his office, but, in addition, to recognise the existence of educational institutions outside, and to afford to his pupils reasonable facilities for profiting by them. And if this be so, what is the corresponding claim on the pupil? Obviously that, in enjoying the privilege of opportunities of study apart from the office, he is bound to devote himself with all the keener application to the work of the office while in it. No office can be properly conducted without discipline. Regularity, application, system, are indispensable. If, in an enlightened and liberal spirit, hours are set apart in which pupils can engage in outside study, they should be rigidly and loyally adhered to. To fail in this is not merely loss to the individual, but injury to others, for the force of example is great, and no one can release himself, even thus early in life, from exercising influence on others; it may be for good, it may be for evil, but it must be for one or other.

One valuable branch of study outside the office, for engaging in which a master should always be glad to afford his pupils facilities, is that of sketching and measuring old buildings. To anyone possessing the gift of artistic draughtsmanship this is an enchanting occupation, although not free from a seductive, and even dangerous, tendency. To make pretty sketches, however fascinating, is not the object in view. Far be it from me to detract from the charm of artistic sketches, but what I insist on is that in sketches of old work the primary requirements are accuracy and clearness, lines well defined, forms and proportions true, joints and construction expressed, and dimensions clearly figured. Such sketches should be finished on the spot, and should not be touched up afterwards. By such subsequent treatment they may lose some of their charm, and must lose much of their value, for, if not finished at the time, they cannot be guaranteed as accurate delineations. That this subject is rightly regarded as of great importance is illustrated by the prizes offered here and elsewhere for measured drawings and sketches; and while, as I have said, masters should always afford facilities, pupils should never lose opportunities for engaging in it. The eye as well as the hand is thus trained to accuracy, and the mind is stored with useful knowledge. In view of the value attaching to work of this nature, I have thought that it would not be uninteresting or unprofitable to direct your attention to the measured sketches of an old master in architecture and his pupils, one whose memory—though he has long since passed away—still lives, and is likely to survive the changing fashions of succeeding eras. Palladio, as you all know, lived in the sixteenth century, having been born in 1518, and having died in 1580. The sketches exhibited, as illustrative of the manner of such work at the period referred to, form part of the Burlington-Devonshire collection, which, through the munificence of our Honorary Fellow, the present Duke of Devonshire, have now become, under certain conditions, the property of the Royal Institute of British Architects. They are interesting as illustrating the actual manner of work of an eminent architect of the sixteenth century and his assistants, a period when architectural students did not glory in the manifold advantages which they enjoy in the present day. It is to be noted, too, that, apart from the character of the draughtsmanship, these sketches amply fulfilled their proper purpose, inasmuch as complete drawings of the buildings they represent—the Baths of Agrippa and of Caracalla—were afterwards made from them, and published in the great Earl of Burlington's book,* which you will find in the library. In further illustration of the manner of work of such masters, a selection from the drawings of the followers of the Palladian school in our own country—Inigo Jones, John Webb, and others in the seventeenth century, and of William Kent in the eighteenth—some of which are signed, is also exhibited; and in respect both of draughtsmanship and design, they may, in my humble judgment, be profitably studied by students, and, I venture to add, even by the architects of this privileged age.

Architectural Competitions.

Passing from such early relationship of master and pupil to more mature experience, many of you will, no doubt, find yourselves occupying the position of friendly rivals in architectural competitions. The general question of whether the system of competition is advantageous or prejudicial to the interests of architecture need not now be discussed. I have more than once recorded an opinion unfavourable to the system, and I see no reason to alter it. I fear, however, that, whether we like the competitive system or not, we must accept it as an established fact, and as practical men, therefore, our efforts should be directed to mitigating its evils, as I should say—or emphasising its advantages, as others may think. There can be no doubt that much has already been accomplished in this direction by the Royal Institute. I have observed that the paper of "Suggestions for the Conduct of Architectural Competitions" which we publish, is very generally referred to and adopted by promoters of competitions throughout the country, and I cannot but recognise that—in spite of occasional enormities—there is now a more general desire to treat architects well than was formerly the case. In my experience as assessor, I have happily succeeded, in more than one instance, in prevailing on promoters to recast conditions, which had already been drawn up although not issued, in such a way as to expunge all objectionable features, and to make them perfectly fair and satisfactory. It is gratifying to be able to record the growth of such a spirit of equity and liberality on the part of promoters as has rendered this possible. In some cases, however, conditions are drawn and issued before the assessor is consulted—as, for example, in the recent competition for the extension of the Pump-Room at Bath. When this is the case, all the assessor can do is to select the best designs in conformity with the conditions, apart from the question of their excellence or otherwise. I confidently assert that in every such instance which has come under my own cognisance, the promoters have suffered from not having called in a professional expert to advise them from the outset.

The question whether promoters should be bound to adopt the award of their assessor is one which admits of a good deal of discussion. It is argued on one side that it is only human nature for those who are going to spend money on the proposed building to reserve to themselves the right of ultimate selection; while, on the other hand, it is asked, What is the use of taking professional advice unless it is adopted? In regard to the first, it should be borne in mind that in almost every competition the promoters do not spend their own money, but that of ratepayers or subscribers, and that they consequently are only agents between the capitalist and the profession; while, in regard to the other view, it does not seem to me to be a *sequitur*, however desirable, that because you call in professional advice you are bound to act on it. I confess, however, that my sympathies are all in favour of unreserved powers being conferred on the assessor. If it is desirable to secure expert skill in the preparation of the competitive designs, is it not equally so in regard to their selection? At all events, I am satisfied that an assessor, when consulted as to the conditions, should allow no mistaken feeling of delicacy to deter him from securing, if possible, the ultimate decision for himself, on the ground that nothing will tend more to inspire confidence in competitors than the insertion of such a condition. He cannot, of course, insist on this, but if he exercises ordinary tact I am convinced that in nine cases out of ten he will succeed. Such has been my own experience, for in more than one case I have obtained this concession contrary to the expressed desire of promoters. Whatever may be thought, however, as to the respective rights of promoters in this respect, there can be no manner of doubt that the interests of architecture are best promoted when the final decision is left unrestrictedly in the hands of the professional assessor. An apt illustration of this is the recent Pump-Room competition at Bath, already referred to. The promoters reserved to themselves the ultimate selection, and in the exercise of this right adopted

† See *Builder* for July 2, 1892.

* "Fabbriche Antiche disegnate da Andrea Palladio Vicentino e date in luce da Riccardo Conte di Burlington." Fo. Lond., 1730.

the design which Mr. Waterhouse had placed second in preference to the design to which he awarded the first premium. In view of the sequel, how infinitely better would it have been for themselves and all concerned had they adopted the award of Mr. Waterhouse! I did what I could to press this view upon them, but ineffectually. A unique feature in this competition—and one which I trust may remain so—was the circumstance that the competitor who was placed second by Mr. Waterhouse, and whom the promoters determined to place first, turned out to be an official of their own who had himself drawn up the conditions. One can scarcely conceive a greater act of impropriety, or one more absolutely unfair to other competitors, and yet a proposition was actually made to the effect that a second competition should be instituted between the three competitors selected by Mr. Waterhouse, one of whom was the official in question. My advice was sought in regard to this proposition before it was brought forward, and it was given unhesitatingly to the effect that there was only one course to pursue—namely, to adopt Mr. Waterhouse's award in respect of the design he placed first, to disqualify the second, to give the second place to the design he placed third, and to ask him to select a design to take the place of the latter; further, that in any circumstances the offence of the official in question was so grave that he should be absolutely precluded from having any further connexion with the matter.

Another illustration of the advantage of the decision of the assessor being final occurred recently. The conditions had been issued and the designs received before I was consulted. While leaving my judgment free—for otherwise I would not, of course, have accepted the appointment—the promoters requested me to consider the designs in a recommended order of merit. It so happened that as regards such order the first had to be last, and the last first, or nearly so, for the design which was far and away the best in every respect, and which I accordingly placed first, was last but one, and the one which beyond comparison was the least meritorious occupied the first place in the suggested order of merit! It is satisfactory, however, to add that the promoters appreciated the reasons which I put before them for my selection, and at once adopted my award.

The relation which competitors bear to one another is, or should be, so simple and clear as not to require definition, and yet a recent instance demonstrates that this is not necessarily the case. We expect, and rightly expect, fair dealing on the part of promoters; and they and we have the same right—neither more nor less—to expect fair dealing on the part of competitors. The unmistakable course for competitors to follow is to comply strictly with the spirit and the letter of the instructions. When conditions are properly drawn, there should be neither doubt nor difficulty in doing so. Such obvious procedure was singularly disregarded in the case of a competition held not many months since. The conditions were evidently drawn with the intention of precluding any chance of the identity of competitors being disclosed, and yet I regret to state that an architect, who at the time was a member of one of our allied societies and an Associate of the Institute, did not scruple to contravene the conditions by disclosing his identity—not, it is true, by signing his drawings, which would have been manly, though perhaps quixotic in view of the conditions—but by means which we could not but condemn, and which were indignantly disowned by his provincial brethren. I need scarcely add that the architect in question is no longer an Associate of the Institute, nor a member of the allied society: so far, well; but the pity is that the credit of the profession should have been even temporarily tarnished by such conduct on the part of one of its members.

Criticism.

Those of you who possess literary ability may sometimes find yourselves placed in positions of delicacy and difficulty in relation to your professional brethren. A facile pen is an acquisition greatly to be desired when guided by truth, knowledge, and charity; it becomes a dangerous power when influenced by prejudice, envy, or ambition. Nothing is more easy for one possessing this power than to write sharp philippics which will insure an approving laugh from the unthinking—but what of the keen wound they may inflict on some sensitive nature? Nothing is so easy as to write disparaging criticisms—for the discovery of real merit calls for study—but what if they are wide of the mark and suggest misleading conclusions? No one should venture to criticise the work of others without first honestly trying to place himself in the position of the author of the work criticised, and to realise the difficulties he had to contend with. Viewed from a general standpoint, a work may be severely censured, which, regarded in the light of the circumstances in which it was conceived, may rightly be accepted as a triumph. This is specially true as regards architectural criticism. How often do our critics and reviewers strive to realise and to make allowance for the difficulties and the hindrances which surrounded the inception or the execution of the work criticised? How often do such considerations influence the pens of ready writers? Alas, for the rarity of Christian charity! It is to be feared that the literary reputation of the critic is too often the influencing motive, regardless of the feelings of the author, and of the difficulties he had to contend with. Be assured your criticism of the work of others will be none the less pungent, and will be all the more appreciated, if your pen is divorced from prejudice and thoughtlessness, and inspired by truth and knowledge, seasoned with brotherly kindness.

Witnesses.

You may be called on to aid by your testimony as experts in influencing judgment for or against your contemporaries. It has ever been—and I suppose it ever will be—the case that men will differ. Even the highest code of morality anticipated this in the qualified injunction, "If it be possible, as much as lieth in you, live peaceably with all men." No doubt there are some to whom the injunction does not apply, inasmuch as to live at peace with anyone seems to be with them a sheer impossibility; but even with those who are peaceably disposed, circumstances will occasionally arise, involving a principle which they cannot concede, and which render it necessary to appeal to the help of others either in law or in arbitration. I cannot claim to speak on this subject as an expert, my appearance in courts of law having happily — although unfortunately, too — been restricted to the discharge of the wearisome duties of a juryman; but it has sometimes vexed me to hear some of my professional brethren, whom I knew to be men of probity, censured by others for appearing as witnesses and giving testimony against them. Such experiences, which are by no means restricted to the profession of architects, may be thought to be unedifying, and I confess that I regard the relationship as perhaps the lest desirable, and the most inartistic, which an architect can occupy; but yet I fail to see why the witness should be the subject of censure more than he against whom he testifieth. Is it not the fact that the last-named is frequently the original sinner? How can light be thrown on a purely technical point other than by the evidence of experts? and how can such evidence be obtained if none will appear as witnesses? How can questionable or derogatory proceedings be exposed if reputable men will not come forward to testify against them? Further, why should it be thought strange that men of the same craft should differ in the witness-box, so long as it is a patent fact that in scarcely any topic of ordinary conversation in society will the same view be taken? In this relationship the rule of guidance appears to me to be clear and simple. Do not consent to give evidence as to the works or character of a brother architect unless you are perfectly sure that you can testify from the safe basis of experience, and in the honest belief that what you testify is truth.

Etiquette.

No dissertation on the relationship in which professional men stand to each other would be complete without some reference to the subject of professional etiquette. We have heard etiquette condemned. We have been told of the triumph of prejudice and jealousy to the detriment of the welfare of client or patient. We have even heard whispers of the neglect of patients rather than the consultation with the rival practitioner which might have saved life. Such rumours—if, indeed, they are true—are at best but exaggerated indications of exceptions which prove the rule. Etiquette gives honour where honour is due; it rightly exposes impostors. Etiquette appreciates ability and encourages merit; it scathingly condemns the individual and the society that live on borrowed plumes, assuming virtue if they have it not. Etiquette generously extends the arm of sympathy; it would rather cut off the right hand than by word or deed injure others for the sake of personal aggrandisement. Etiquette recognises all honourable methods of advancement; it rightly looks askance at questionable expedients of self-advertisement, such as are too frequently resorted to. In a word, etiquette is the standard which unerringly gauges the reputation of professional men; above the level of the gauge is to be found all that is honourable and commendable; beneath it, all that is grovelling and unworthy. In the Harveian oration delivered at the Royal College of Physicians last October by Dr. Pye Smith, this subject was so happily delineated that I cannot refrain from quoting the words of the Harveian orator:—"Professional etiquette really means the observance of those rules which distinguish a profession from a trade, which make our calling honourable as well as honest, which check the arts of advertisement and direct our ambition to obtaining the suffrages—not of the public which cannot, but of our profession which can—judge truly, rules of conduct which are, in fact, nothing but the carrying into daily practice of the golden rule, to do to others as we would they should do to us."

Sir Frederic Leighton's Addresses.

Although my subject is the relationship that exists between members of our own profession, I must, before closing, crave your indulgence, while, for one moment, I stray beyond it, for the purpose of directing your particular attention as students of Architecture, to the very remarkable addresses on the arts, and more especially the architecture of different countries, which have been recently delivered by one who is not a member of our profession. For many years we have been accustomed to regard Sir Frederic Leighton as a man of great parts and exceptional culture. To refer to his works as a painter would be superfluous; his claim to be a sculptor of no mean order is indisputable; and as if this were not sufficient, the subject of his more recent addresses to the Students of the Royal Academy has led him, as it were inadvertently, to demonstrate that in regard to the art of architecture he possesses an intelligent and a critical grasp of the subject second to no modern author. To few indeed is it given to combine with wide historical research and keen critical acumen, the indescribable literary charm of composing poetry in prose. Let me commend to your thoughtful attention the study of these singularly learned and graceful discourses.

In now uttering my parting words to you from this chair, let me wish you God-speed in the elevating career on which you are entering, a career which is the unique embodiment of the ideal and the useful. In the pursuit of it you will not, it is true, be enfranchised from those hindrances, anxieties, and worries which are incidental to all human engagements; nor will you have as your goal the accumulation of wealth, which so many regard as the chief end of man, though it is far, very far, from being so in truth; but, if inspired by a generous spirit of devotion, such as should ever be the characteristic of the student of art, you will not fail to find in it as much pure enjoyment, and as much ennobling aspiration, as you are likely to attain in any avocation in which you could engage.

Review of Students' Work.

Mr. Alexander Graham, the member who had been deputed this year to prepare the usual critical notes on the students' drawings, then read a short series of notes on these, classifying them under the heads of:—(I.) Measured Drawings and Sketches; (II.) Original Designs; (III.) Literary work in the form of Essays; (IV.) The work of the Travelling Students of last year. In the course of his remarks he observed, in regard to the measured drawings and sketches, that it was matter of regret that the Institute Medal given for so important a branch of study as measured work should have attracted only two competitors, whereas the Pugin Studentship had enlisted the artistic services of six candidates of more than average ability. Sketching was a fascinating pastime for anyone who could use a pencil or a brush with ordinary facility, but pretty sketches, simply as little pictures, had no practical value, nor would they help an architect in his daily practice. A few careful measurements of any portion of a well-designed building, showing the size and jointing of the masonry as well as its scale and surroundings, committed to paper on plan, section, and elevation, would prove more instructive and more useful than whole sheets of pictorial bits.

As drawings of measured work nothing could be better than those of the north transept of Lincoln Cathedral, submitted by Mr. James R. Wigfull to whom the medal had been awarded.

Lincoln, with its charms of line and form and proportion, was always attractive to the student as well as to the advanced architect, and although nearly every part of the structure which was worth sketching or measuring had been committed to paper in recent years, such drawings as these were very welcome as a valuable contribution to the portfolios of the Institute. They were exactly what measured drawings should be: clear, precise, full of meaning, and without any attempt to produce pictorial or meretricious effect. He suggested that the measured drawings for which prizes had been awarded should be turned to more useful account than had hitherto been the custom. For nearly fifty years the holders of the Silver Medal had deposited in the library a copy or reproduction of their drawings, and, consequently, there was a mass of useful material stowed away which was accessible, but not easily so. Would it not be well, therefore, to classify this good material and to adopt, for the future, some uniform system of reproduction?

The large number of sketches submitted by six competitors for the Pugin Studentship indicated that the power of sketching with facility was spreading rapidly; but it was a question whether the excellent sketches of Mr. J. Paul Cooper, principally illustrative of Gothic architecture in Italy, were admissible for a prize awarded "for the promotion of the study of the Mediæval architecture of Great Britain and Ireland."

These remarks were in some way applicable also to Mr. W. Curtis Green's careful drawings of "Ye Old Oak House," West Bromwich, which might be classed as Mediæval, though some of the details give indications of work of later date.

The much-coveted prize of the Soane Medallion had been awarded to Mr. James Humphreys Tonge for a clever and picturesque design and accompanied by a fairly workable plan, but it was puzzling to know what could have induced so capable a designer to carry cross walls right through the centres of a series of bay-windows. These bays, which were conspicuous features in the quadrangle, were designed externally as one window and not as two separate windows. Another defect in the planning was the position of the water-closets, which were grouped together close to the main entrance gateway, and were accessible only by passing in front of a sitting-room window. It might be some consolation to Mr. R. S. Dodds, the author of "Quien Sabe," to know that his general design found almost as much favour with the judges as the one placed first. Its quiet collegiate character, the marked exercise of restraint in the treatment of wall surfaces, and the excellent proportions of the gateway-tower, were the most noticeable points in the design.

The Tite Prize had only attracted four competitors. So fascinating a subject as a Royal Mausoleum, to be treated according to the principles of Palladio, Vignola, Inigo Jones, or Wren, might have brought a larger number of candidates into the field. No one of the designs had attained such excellence as to evoke unqualified admiration, the merit lying almost as much in the plan as in any special skill in architectural composition. The prize had been awarded to Mr. A. R. Hennell, for a simple design after the manner of Palladio. The plan was meritorious, and the internal effect of the four bays with their domical roofs could not fail to be pleasing. The perspective drawing did scant justice to the design, and it was fortunate for the author that the merits of the composition and not the perspective had full weight with the adjudicating committee. The design bearing the device a *Red Cross* was picturesque, but the architecture did not belong to any particular school. The general conception of the plan was meritorious, but it was doubtful whether an arrangement applicable to so large a building as the Invalides was suitable for an edifice of such very moderate dimensions. It was matter of surprise that none of the candidates were inspired by Bramante's charming little circular chapel of San Pietro in Montorio, which seemed to lend itself to such a subject as a Royal Mausoleum. It possesses many of the characteristics of the school of Vignola; and, for subtle proportions, balance of parts, and pleasing outline had not been surpassed by any other work of its kind.

For the Grissell Medal there was only one competitor. This was a matter of regret, for the subject, a timber dome with a lantern, was within the scope of any man who had had a moderate share of practical experience. The result was not altogether satisfactory, for the drawings exhibited were incomplete in themselves, and the subject, although commenced on right lines, had evidently not been fully worked out. It was to be hoped that the same subject, or a similar one, would be given again, and that the author of this design would not be discouraged, but exercise his powers again with more fortunate results.

In regard to the literary work in the form of essays, Mr. Graham observed there seemed to be an idea that illustrations, mostly in the form of photographs, were the backbone of the composition, and that so many pages of descriptive matter, supplemented by a few comments, constituted an essay. Without any desire to undervalue the zeal and labour that had been shown in a marked degree by so many competitors, he would only venture to suggest the study of the pages of some of our great essay-writers, in order to learn from them the form and method adopted in building up their work, as it were, from the starting point. Mr. Graham concluded by speaking in high terms of the drawings by the Travelling Students of last year, noting, in particular, the valuable labours of Mr. Banister F. Fletcher, the holder of the Godwin Bursary. As a practical study of a notable group of temporary buildings, the handsome well-illustrated volume "Report on the Columbian Exposition at Chicago, 1893," would take honourable rank as a work of reference.

The President said it was never a very gracious task to criticise the work of others, especially of young men. Mr. Graham had happily found a great deal to commend in the work of this year, and if he had occasionally criticised freely faults, as he thought, in the works of the students, he was quite sure there was no young man so devoid of that common sense as not to be gratified by the friendly criticism of so experienced a critic as Mr. Graham. He thought, therefore, the members would all join with him heartily when he proposed a vote of thanks to Mr. Graham for his kindness in giving so much time to the preparation of these friendly criticisms.

Mr. Spiers also proposed a vote of thanks to the President for his excellent and admirable address, which, he said, would be of the greatest value, not only to the students present, but to the architects in the United Kingdom.

The President then proceeded to distribute the prizes to the successful competitors, whose names we published last week (see p. 33).

The President intimated that at the next meeting, which would be held on the 29th inst., a paper would be read by Professor Kerr, entitled "Observations on the Plans of Dwelling-houses in Towns."

The meeting then terminated.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A METROPOLITAN district meeting of the Association of Municipal and County Engineers was held at the Institution of Civil Engineers, Westminster, on the 12th inst. Mr. J. T. Eayrs (President of the Association) presided, and amongst a large attendance of members were Professor Robinson, Major Isaacs (Holborn), Messrs. T. de Courcy Meade (Hornsey), H. Percy Boulnois (Liverpool), C. H. Cooper (Wimbledon), C. Mason (St. Martin's), W. N. Blair (St. Pancras), R. Godfrey (King's Norton), Wheeler (Westminster), J. H. Strachan, C. Jones (Ealing), M. W. Jameson, J. Birch, F. J. C. May, F. W. Ruck, S. T. Tomkins, W. Forder, W. H. Savage, and others.

The President, in opening the meeting, wished the members a happy New Year, and expressed the hope that it would be a successful one, both to themselves and to the Association.

Mr. C. Mason then read a paper on Carriageway Pavements, with special reference to what has recently been done in the Strand and Long Acre. He said that prior to 1883 most of the carriageways in the parish of St. Martin-in-the-Fields were paved with granite or macadam, but since that time the principal thoroughfares had been paved with yellow deal blocks, 9 in. by 3 in. by 6 in., creosoted and uncreosoted, laid upon a cement concrete foundation 6 in. in thickness, the blocks having ⅜-in. joints grouted in various ways, the work being done by contract. The carriageways of St. Martin's-lane, and Trafalgar-square (east) now existing, were part of the 1883 works, and are examples of wood pavement, having lasted ten years in the centre of London. In the years 1890-1-2, plain yellow deal blocks were used in all cases of renewal, the author's reason for using such materials being that he considered the traffic of the district to be so heavy that very little gain in the life of the road would be obtained by using creosoted blocks, and he is still of opinion that creosoting does not materially increase the life of the pavement when subjected to an exceptional traffic, although he has recently advocated, and is now using creosoted blocks for sanitary reasons, and as being a better pavement for scavenging purposes, as the blocks dry more quickly than plain ones. In 1890 the repaving of Pall Mall East was carried out with blocks laid close together without any transverse joint, grouted with Portland cement; but as this was somewhat of an experiment an allowance was made for expansion in addition to the ordinary channel joints. It has since been proved that these joints were unnecessary, the wood not having expanded to any appreciable extent longitudinally. The wood paving in Northumberland-street was laid in a similar manner, but without the sand joints, and has been found to be a great success, so much so, that in the following year (1891) the granite pitching in the lower part of Villiers-street was taken up and the substituted wood pavement laid "close-jointed." In the same year the author had about two thousand yellow deal blocks treated with the preparation known as "Carbolinium Avenarius," which is largely used by railway companies for preserving sleepers. The trial was considered satisfactory, and the author has had 30,000 more blocks similarly treated. The cost of treatment is about the same as creosote. The chief paving works of last year were in the Strand, Long Acre, Charing Cross, and Cranbourne-street. The pavement taken up in the Strand was laid in September, 1889, and was laid with plain yellow deals, with a short length of forty yards with "Jarrah" blocks. It was found that in four years the deal blocks had worn down to an average of 2½ in. in thickness in the narrower parts, and to an average of 3½ in. in the wider parts of the road. The Jarrah wood had been reduced to an average of 4 in. in depth, thus losing 1 in. as against 2½ in. for the deal blocks. This can hardly, however, be taken as an accurate test of the relative wear of the two materials, as the Jarrah was laid upon an unsatisfactory foundation. Immediately opposite the West Strand Post Office, adjoining Charing Cross, and at the starting-place for omnibuses going eastward, 6 in. deal blocks, laid in 1889, had worn practically through in twelve months. This portion was taken up in September, 1890, and repaved with 5 in. Jarrah blocks. This hard wood when taken up last September had worn down to a thickness of 2¼ in. in the line of traffic. This may be taken as a fair illustration of the comparative life of the hard and soft woods when subject to an extraordinary wear and tear, the deal having worn 4½ in. in twelve months, as against the hard wood 2⅜ in. in thirty-six months, being in the ratio of 1 to 5. In April last year the author reported to the Vestry in favour of repaving the Strand during the autumn, and the question of material was discussed at several meetings, the main point being hard *v.* soft wood. The final decision of the Vestry was in favour of deal blocks, mainly in consequence of the hard wood being, in their opinion, too noisy a pavement and also liable to become more slippery than the softer material. There may be an objection in such a busy thoroughfare to any increase in the noise of the traffic, but it is still a matter of opinion as to whether the hard wood is more slippery if properly cleansed, and statistics on this point would be of value. The author having given statistics of the traffic in the Strand, the total number of vehicles passing Wellington-street in April 1890, in the period of eighteen hours, being 14,924, and details of the recent work of repaving the Strand, said he had little doubt that, by substituting hard for soft wood pavements, many of the difficulties now experienced would be overcome, a cleaner and more sanitary pavement would be obtained, and the cost of periodical renewals very much reduced.

Mr. W. N. Blair, A.M.Inst.C.E. (St. Pancras), then read a paper on the "Jointing of Wood Pavements." He said that, while the subject of carriage-way pavements had received considerable attention during the last few years, and various details in relation to materials and contour or profile had been gone into very thoroughly, there did not seem to have been the same interest displayed in securing a pavement comprising in as high a degree as possible the qualities of durability, silence, facility for cleansing, and, as a consequence, economy. The questions to be considered in the paper were—(1) Is it desirable to have wood blocks in actual contact with each other on all sides? or (2) is it preferable to leave a space between the blocks to be filled up with some

other material? (3) what should that material be? (4) of what width should such spaces be? With reference to joints, the author said it was admitted on all hands that an open or wide joint greatly reduces the life of the wood, as the fibre is allowed to spread, and disintegration follows. This defect is a matter of degree—the wider the joint the greater the injury—and with no joint at all the defect is eliminated; but Mr. Blair was of opinion that a joint of $\frac{1}{8}$ in. or $\frac{1}{10}$ in. does not cause any appreciable injury to the wood if filled with pitch, which is not subject to the same action as cement grout by being pulverised by traffic. It is also generally recognised that joints foster dirt, and dirt causes danger to traffic as well as discomfort to those who pass along or live in the street, and further, joints induce noise. The system adopted in the Parish of St. Marylebone of laying yellow deal blocks as close as they can be driven, and flushing the paving over with hot tar, using brushes to push the fluid forward to prevent accumulation on the surface, has produced the pavements of Marylebone-road, Great Portland-street, Oxford-street, and others, which are certainly among the finest pieces of paving in London. Another variety in the method of laying has been tried in Chelsea, where each block was dipped in a box containing a hot pitch mixture, and immediately placed close up to the adjoining blocks, and the surface of the paving was afterwards flushed over with hot pitch. Some years in a Midland town, where cement grouting was used, and afterwards a similar period in more Northern towns, where the joints were invariably made of pitch, has induced the author to form a preference for the bituminous joint, and, while claiming that the weight of evidence is in support of that preference, he admits that on one head the case is the other way. Mr. Blair summed up the merits and demerits of the two methods as follows:—Pitch grout allows joint to be reduced to $\frac{1}{10}$ in. wide, and in case of soft wood the blocks may be in close contact. Being more or less elastic, the joint absorbs expansion and gives way to contraction of blocks. The joint next the kerb does not alter from the time of the first completion of the work. The pavement is always impervious, and the pitch joints preserve the blocks. Traffic may be turned on to the work immediately. The cost of the work has been ascertained to be 7d. per superficial yard. The cement grout requires a joint at least $\frac{1}{4}$ in. wide; this eventually causes the formation of a corduroy road, as the edges of the courses get bruised. The material being rigid is incapable of compensating for expansion or contraction in the blocks; there is invariably an irregular joint next the kerb as the blocks shrink. When dry they become loose in the jointing material; cement grout joints require to be left a week to set. The cost of the work is 6d. per superficial yard. If these conditions are accepted as correct, it remains that the cement joint is only superior to the pitch joint in respect of progress during wet weather, and the difference in cost of 1d. per yard by no means represents the economy effected in work caused by the expansion of the wood, apart altogether from the increased durability of the wood, and the greater cleanliness obtained.

Mayor Isaacs said the subject of most practical value was whether there should be joints or not in wooden pavements, what should be their width, and the material for filling the joints. He hoped there would be no pitched battles between engineers of the North of England and London, for it seemed they were quite at daggers drawn over the material which should be used. Having seen the effects of creosote in Liverpool and Manchester, he came to the conclusion that it was not a suitable substance in any roadway subjected to large traffic, where the traffic would cause the roadway to rock. The joints in wooden pavements were the recipients of a large amount of matter which gave off an offensive effluvium in certain states of the atmosphere and must lessen the life of the pavement. With regard to creosoting, he was of opinion that any value which might be obtained from the creosote was more than counterbalanced by having inferior material put into the pot. He was of opinion that engineers would have to turn their attention seriously to the sanitary aspect of wood pavements. There could be no doubt there was a hidden danger in wood pavements, and he had heard physicians say it was the cause of the large amount of diphtheria to which London had been subject in recent years.

Mr. H. P. Boulnois (Liverpool) expressed himself in agreement with Mr. Blair as to the use of bituminous joints for wood paving. With regard to traffic, he thought it should be reduced to a standard, as they were absolutely working in the dark until they were able to compare notes with each other as to the weight a road would bear.

Mr. Wheeler (Westminster) said from his experience he was convinced wood paving had not a very long life, but that some other pavement would be introduced into the streets of London.

Mr. Tomkins (Marylebone) said he had been laying close-jointed wood pavement for twelve years with complete success.

On the motion of the President a hearty vote of thanks was accorded to the readers of the papers, and was acknowledged by Mr. Mason and Mr. Blair.

Mr. C. H. Cooper (Wimbledon) then read a paper on hospital tents at Wimbledon. He described the method of erecting the tents, the process of ventilation and heating, and remarked that their statistics bore out previous experience that recovery in tents is better than in houses. Thus, from October 1, 1893, to the end of 1893, all cases (206) that were treated at Durnsford Lodge and in tents recovered, whereas of 142 cases treated at home during the same period three died. On the motion of Professor Robinson, seconded by Mr. C. Jones (Ealing), a hearty vote of thanks was accorded to the author, and acknowledged by Mr. Cooper.

THE LONDON COUNTY COUNCIL.

THE first meeting of the London County Council after the Christmas vacation took place on Tuesday at the County Hall, Spring Gardens, Mr. John Hutton, Chairman, presiding.

The Rating of Land Values.—Nearly the whole of the sitting was occupied in considering the adjourned report of the Local Government and Taxation Committee on the question of the rating of land values, a long report on the subject being brought up by Mr. Costelloe, the chairman of the Committee. Appended to the report were the following recommendations:—

"(1.) That it is necessary without further delay to provide for a taxation of site values to extend to and be leviable upon all interests which share in the site value, and that for that purpose it is desirable to provide in the valuation lists a column for site values, including vacant land, in addition to the columns already provided for.

(2.) That the term 'site value' be defined as follows:—'The annual rent which at the time of valuation might reasonably be obtained for the land comprised in any hereditament, as a cleared site, if let for building by an owner in fee; or, if the land be not built on or let for building, a proportion equal to four per cent. of the price which at the time of valuation might reasonably be obtained for the land by such owner.'

(3.) That in cases where the occupation of land for profit has been rendered possible by drainage, embankment, or other works of an analogous nature, the Council should be empowered to provide for an allowance to be made to the owner of the site value so described, in respect of any expenditure on such works within twenty years before the valuation—provided always that any allowance contemplated under the above resolution shall be so expressed as to be independent of past or present municipal expenditure.

(4.) That, without prejudice to such other uses of the site value column as Parliament may determine, a new and specific rate should be imposed upon the site value, and that the site value rate ought to be started as a specific tax of so many pence in the pound.

(5.) That the tax should commence at a rate (to be named in the Bill) of 1s. in the pound upon the assessments appearing in the site value column.

(6.) That the Council should be empowered to alter the tax from time to time by an amount not exceeding 2d. in any one year, so that the rate shall not exceed 2s. in the whole.

(7.) That the new rate should be collected by the local authorities for the Council, and that a proper allowance for cost of collection should be made.

(8.) That, for purposes of recovering arrears, the Council should be empowered at its option to make and register an order charging arrears on the site.

(9.) That the rules of deduction above stated be approved.

(10.) That the method of collection and draft forms proposed by the sub-committee and approved by us be adopted as the basis of a scheme to be embodied in a draft Land Values Rating Bill.

(11.) That in any such draft Bill a clause should be included as to existing or future contracts corresponding with clause 13 of Mr. Dalziel's Land Values Bill.

(12.) That in any case where the whole of the site value as defined in resolution 2 cannot be obtained, used, or enjoyed by the persons to be charged, then the assessing authority should be entitled to take all the circumstances into consideration, both in assessing the total amount to be inserted in the site value column, and in the apportionment of the rate among the various interests.

(13.) That all persons alleging that the rules of deduction do not apply to their case, either because of the last resolution or otherwise, should have power of appeal to the assessment authority in the first instance against the appointment.

(14.) That any person alleging that the rules of deduction do not provide for his case should have a summary right of appeal to the new Valuation Court proposed to be created or to any corresponding tribunal.

(15.) That the proposed Land Values Rating Bill should be applicable to all municipal areas in England.

(16.) That these resolutions, together with this report and the further papers circulated to the Council, be referred to the Parliamentary Committee with instructions to prepare a draft Bill on the lines indicated."

Mr. H. P. Harris moved the following amendment:—

"That this Council is of opinion (1) that the proposed valuation of the sites of all buildings as if they were 'cleared sites' would be speculative, complicated, and enormously expensive; (2) that the proposed 'site value' rate could not be equitably apportioned among the numerous and diverse interests in tenements; and (3) that the necessary revision of local taxation should be in the direction of making personal property, as well as real property, bear a fair share of local expenditure."

Mr. Debenham seconded, but the amendment, after a protracted discussion, was defeated by a large majority.

The Vice-Chairman of the Council, Mr. Charles Harrison, next moved:—

"That as it is imperatively urgent that a measure should be passed next session for the taxation of ground or site values, and as this cannot be done unless the Bill be brought in as a Government measure, the Council is of opinion that all lands situate in municipal areas, and whether partially or entirely covered with buildings or existing as vacant land, should be made directly liable to local and other taxation, and for that purpose should be entered in a separate column in the valuation lists; and that no contract should be allowed to affect any charge falling or imposed on the land value as stated in the land value column. That with a view to the framing and introduction of such a measure a copy of this resolution be forwarded to the Government, together with the following documents:—Report of the Local Government and Taxation Committee, November 29, 1893; Land Values (Taxation by Local Authorities) Bill, introduced into Parliament February 1, 1893; memorandum by the Vice-Chairman of the Council on the subject of that Bill. Reports by the valuer of the Council upon the above Report and Bill, and the various documents therein referred to; and that the Chairman, Vice-Chairman, Deputy-Chairman of the Council, the Chairman and Vice-Chairman of the Committee, together with Mr. Stuart and Mr. Wood, be a Committee to confer with the Government as to the introduction of a Bill, and to report to the Council."

Professor Stuart seconded the amendment.

Mr. Costelloe, on behalf of the Committee, accepted the amendment, which was adopted on a show of hands by 54 votes to 18.

Mr. Boulnois moved to add these words, "t being understood that the Council not having considered the details of the report of the Local Taxation Committee it is not committed to any particular course of procedure."

Mr. Westacott seconded the rider, and was speaking at seven o'clock, when the debate stood adjourned.

Legal Assistance to District Surveyor.—The report of the Building Act Committee contained the following paragraph, the recommendation being agreed to:—

"Proceedings were taken by the district surveyor against certain builders for the recovery of his fees in respect of buildings erected without notice on surplus land belonging to the London and North-Western Railway Company, in Maria-street and Harwar-street, Shoreditch, the builders having contended that the erections in question were exempt from the provisions of the Metropolitan Building Act, 1855. The magistrate, however, decided that the exemption clause did not apply, and at the request of the company's solicitor agreed to state a case for argument in the High Court. Mr. H. Lovegrove, the district surveyor, has asked the Council to render him legal assistance in support of the magistrate's decision, and as the point whether the buildings in question are exempted or not from the provisions of the said Act is of some importance, we recommend—

'That the solicitor be instructed to render such legal assistance as he may deem necessary to Mr. H. Lovegrove, district surveyor, in support of the magistrate's decision when the case comes on for argument in the Queen's Bench Divisional Court.'"

Sewer Emanations.—The Main Drainage Committee brought up a report containing the

following paragraph, the recommendation being agreed to :—

"On March 13, 1891, the Council authorised us to retain the services of an expert to make observations on the organisms in sewage and sewer air under various conditions, and the effect thereon of antiseptics or other chemicals. Mr. J. Parry Laws was engaged for this purpose. Having received a first report of the result of his investigations, we deemed it advisable that the experiments should be continued, and the Council, on November 22, agreed to continue the services of Mr. Laws with the view of ascertaining the effects produced by organisms on sewage, and whether the conditions of the air in a small experimental sewer with intermittent flows of sewage are similar to those found to exist in large sewers, also on the condition of sewer air in stagnant sewers and other places where abnormal conditions exist. These experiments he has now completed, and his report has been presented to us. Although sewer air has for a long time been regarded as dangerous and a likely source of infection in certain specific diseases, there has hitherto been no attempt to verify this hypothesis by scientific research. Now that it has been submitted to the test of a long series of scientific experiments, the hypothesis has been found to be incorrect. The results of the investigations summarised in the two reports made by Mr. Laws prove conclusively, contrary to general belief, that the micro-organisms of sewer air are almost invariably less in number than the micro-organisms to be found in fresh air surrounding the sewer at the same time in the same vicinity, even when the sewer air is examined under the most varied conditions; they, moreover, prove that the micro-organisms of sewer air are related to the micro-organisms of fresh air, and not to those of sewage. These facts furnish strong probable evidence that the micro-organisms in sewer air are exclusively derived from the fresh air which gains access to the sewer by ventilation. If the micro-organisms were derived from the sewage and sewer walls their number would increase with the length of sewer traversed, or with the length of time the air had been in contact with the source of contamination. Although one is led almost irresistibly to the conclusion that the micro-organisms in sewer air do not constitute any sourse of danger, it is impossible to ignore the evidence, though it be only circumstantial, that sewer air in some instances had apparently had some casual relation to zymotic disease. It is quite conceivable, though at present no evidence is forthcoming, that the danger of sewer air causing disease is an indirect one; it may contain some highly poisonous chemical substance, possibly of an alkaloidal nature, which, though present in but minute quantities, may nevertheless produce, in conjunction with the large excess of carbonic acid, a profound effect upon the general vitality. We consider that the information obtained from these experiments is interesting and valuable, and we are of opinion that they should be continued further in certain directions not hitherto ascertained, and with this view we have asked Mr. Laws, in conjunction with the chemist of the Council, to suggest what further experiments should be made. We have directed a copy of the two reports already made by Mr. Laws to be sent to each member of the Council, and we also consider it desirable that each of the local authorities should be supplied with a copy. We recommend—

'That a copy of the reports be forwarded to the City Commissioners of Sewers and the several vestries and district boards.'"

The Council adjourned at twenty minutes past seven o'clock.

ANOTHER ROMAN FIND AT CHESTER.—Mr. F. Haverfield writes to the *Manchester Guardian*:—"One more Roman inscription has to be added to the long list of those which have been discovered inside or near the north city wall of Chester. This new find is a tombstone commemorating one Q. Domitius Optatus, of the Claudian tribe, born at Virunum, now Klagenfurt, in Styria. Probably he was a soldier in the garrison of Deva, though the inscription, which is imperfect, does not, in its present shape, state this fact. The stone was found in the embankment on the north (outer) side of the wall about thirty yards west of Pemberton's Parlour. This latter, which is a sort of bastion in the wall, lately fell, and the inscription was detected in the course of the repairs. The position of the stone is curious. It is usually thought that the north wall of Roman Chester did not extend so far to the west as Pemberton's Parlour, but turned southwards somewhere about Morgan's Mount. The occurrence of this stone further west suggests, at first sight, some doubts as to this view, but the doubts are perhaps not very substantial. An opening made in the wall in connexion with the repairs to Pemberton's Parlour revealed no Roman masonry, and a stone which lay in the earth outside, like the one newly found, may well have been moved from its place. The detection of the stone is due to Mr. T. Matthews Jones, the City Surveyor, whose watchful care over relics of Old Chester has laid antiquaries under many obligations."

Illustrations.

BRASS OF THE HEERS, FROM THE MUSÉE D'ANTIQUITÉS AT THE PORTE DU HAL, BRUSSELS.

THIS fine brass hangs upon the wall of the right-hand room on the ground floor. As the brass hangs somewhat forward, it is difficult to rub it, and a judicious arrangement of wafers is necessary to attach the paper for rubbing on to the brass.

A capital account of this brass is given in that best work on Continental Brasses, by the Rev. — Creeny, of St. Michael-at-Thom's, Norwich. One advantage of Mr. Creeny's work is that the pictures are facsimile reproductions—reduced in size, of course—of the rubbings themselves, much superior to the ordinary drawn engravings of other works on brasses. The Director of the Museum of Antiquities at Brussels is a keen archæologist, and is always pleased to obtain information on brasses.

This brass measures 8 ft. 6½ in. by 5 ft. 1½ in. The illustration is from a rubbing by the Rev. Tennyson d'E. Jesse.

MANCHESTER MUNICIPAL TECHNICAL SCHOOL.

THIS illustration, which is from a drawing exhibited in last year's Royal Academy, shows the exterior aspect of the building, of which Messrs. Spalding & Cross are the architects. Unfortunately, owing to the absence of both the architects from town, they did not receive our usual request for a plan of the building until too late to comply with it. We can therefore only give a few notes as to the main arrangement of the plan. Owing to the necessity for providing adequate external light and ventilation to the working and administrative rooms, it was considered advisable to place these in the four blocks forming the frontages to the various streets, placing the entrance-hall or museum in the large internal area thus formed. The corridors, 9 ft. wide, are to be well lighted, and arranged so as to be suitable for the exhibition of designs and models, as well as for the students' lockers. The main staircase is at the extreme end of the Museum Hall. A bicyclists' entrance is provided with an inclined plane to a room in the basement, and a special staircase from this; an indication of the practical importance which the cycle is attaining in modern life; possibly a good many students would attend such a centre of education by this means who otherwise could not conveniently reach it. Four spacious special students' staircases are provided, all available for use in connexion with the large lecture-hall on the first floor, which is made readily accessible from all parts of the building.

The mechanical engineers' department is placed on the basement floor, efficiently lighted either from side windows or skylights; the room for constant temperature, and the ice-room, in the sub-basement; the department of applied physics and electrical engineering on the ground floor; textile trades in the basement; applied chemistry on the third floor, except the lecture-rooms, which are on the second floor; dyeing and finishing on the first floor; brewing and metallurgy on the third floor; building trades on the first floor; printing and lithography on the third floor; commercial subjects on the second floor; industrial design on the fourth floor, all the principal rooms having top studio windows as well as the ordinary windows. Departments for women's work are on the fourth floor.

Special care has been taken to place the lecture and class rooms well away from the noise caused by the machinery of the textile department. The principal lecture-rooms front the widest street in order to obtain the maximum amount of light. All the private or professors' rooms face the principal street. In regard to architectural style, a free treatment of Francis I. Renaissance has been adopted, as admitting of the incorporation of sash windows and of a large expanse of window without interfering with the architectural design.

The lighting is to be by electric light, but gas-pipes will be laid on in case of any sudden failure of the electric light.

The walls generally will be of local "commons," the fronts next the streets being faced with red Ruabon facing bricks; the dressings of Bath terra-cotta. The walls of internal courts are to be faced with white glazed bricks up to the first floor level, the roofs of front buildings covered with small Whitland Abbey green slates, and the back roofs with blue Bangor slates. The floors throughout will be of fire-proof construction, and all class-rooms and lecture-rooms not required to have impervious paving (such as granolithic) will be floored with wood blocks.

Two lifts are provided, and speaking-tubes will be fitted throughout the building.

The building is not yet actually commenced. The system of ventilation and heating which will probably be adopted is the combination known as the "Sturtevant Blower System," which, reduced to its primary parts, comprises a fan of a centrifugal type, motor, heater, a complete system of air-distributing ducts (together with the necessary means of generating steam and conveying it to the apparatus), and a general arrangement of ventilation planned on the "plenum" system.

WAYSIDE NOTES IN EAST ANGLIA.

AMONG the comparatively untrodden byeways in East Anglia, there are to be found many interesting specimens of domestic architecture but little known by reason of their remoteness from railway communication. They are doubly valuable to the student because their obscurity has in many instances delivered them from the scourge of too much restoration and improvement, and they remain in much the same form as when they were first erected.

It is gloomy to contemplate these fine old manor houses and halls, falling gradually to decay and occupied by agricultural labourers, and I have thought it might perhaps be of service to call attention to one or two of great interest, but little known to the community at large. About six miles N.N.E. of Clare is a small scattered village called Hawkedon, standing on pleasant rising ground near a tiny rivulet, and but sparsely populated.

It is divided into two manors, Hawkedon Hall, now a farmhouse, and Thurston Hall, of which I give three illustrations.

Thurston is a very ancient manor; it is called in Domesday, Thurstanestun, and one of its earliest lords was said to have been Roger Pictaviensis, who was coeval with William the Conqueror.

In the fourth of Richard II. Gilbert d'Umfreville died, seised of the manor of Thorstanton, or Thurstruston, in Hawkedon, and from him it passed into the possession of the Multons, and afterwards it was vested in Sir Robert Harrington, who died seised of it seventh of Henry IV. in right of his wife, who was daughter of Sir Nigel Loryng, Knight of the Garter.

In the reign of Edward VI. it belonged to the Everards, and through them it came to Geoffrey Maltyward. Then after them it passed to William Gilby, who sold it to the Gotts family.

The present owner of the property is J. H. Porteus Oakes, of Nowton Court, near Bury St. Edmunds.

The house as it now stands is Jacobean, and is dated over the porch and inside the panelled drawing-room 1607.

It is arranged on the customary plan of the period, with a projecting porch leading into a large central hall, on the right-hand of which are the principal apartments and on the left kitchens, butteries, and so forth.

It is constructed entirely of timber studwork filled in with bricknogging, and is in very fair preservation.

The rooms are mostly panelled, the drawing-room being of exceedingly fine detail, with elaborate mantel and overmantel and open fire-place.

In the hall the reveals of the windows are enriched with carved heads in medallions, and the carving has a strong Flemish feeling. The chimney-stack at the rear of the hall is exceedingly fine, having four very elaborate shafts of moulded brick in diaper patterns springing from a square brick base. This chimney is shown in my sketch of the back, but is hidden in the other sketches by the porch gable.

Inside the porch, the door-head of which is richly carved, there were, until lately, two elaborate seats, but these have been removed by the present owner. The outer gates of the porch are small, and are filled in with turned and twisted balusters.

The house offers an excellent study to anyone who wishes to see one of these manor houses with all its original details and arrangement but little altered or tampered with.

Leaving Thurston Hall, a walk of one mile brings us to Swan Hall, another old house in the same parish, and nearly identical in age and characteristics, but more elaborate in detail.

This was a house of considerable importance but part only now remains. It derived its name

from the family of Swann, who originally possessed it, and in the windows the arms of Swann can still be seen—*azure* on a fesse, *or* between three swans, naiant *arg.*, three roses *gules*, bearded *vert*, seeded of the second. From the Swanns it descended to the Abbot's, who probably built the present hall, as the initials W. A. appear over the outside of the bay window on ground floor, divided by a merchant's mark.

From the Abbots it came into the possession of the Rev. Chas. Edward Steward, and it was sold by him after 1764. It has since belonged to the Rev. Roger Kedington, of Rougham, who died in 1818.

It now belongs to Geo. Weller Poley, Esq., of Boxted Hall.

The gable to the road is a very fine one, full of work and carving, and the design is exceedingly quaint in detail. The side furthest from the spectator in the sketch preserves its old bricknog finish, but the rest has been stuccoed over. The chimneys are very good. The plan and arrangement was originally similar to Thurston Hall. But the central hall has been subdivided up, and its identity lost. The main sitting-room preserves all its features of panelling and finishings nearly complete.

Bentley Hall is five and a-half miles south-west of Ipswich.

The Manor of Bentley, together with other lands in the same parish, belonged to the Augustine Priory of Holy Trinity at Ipswich, for in the Charter of King John to the Priory it is stated "By the gift of Hervey of Dodneis the church of St. Mary, Bentley, with all its appurtenances. Lands in Bentley and Dodneis by the gift of William Tallemasche and Osbert de Reimes, and Harvey and Thiedæ his wife, and William their son, and of the merchant Godwin. By the gift of Payne the moneyer, Dugglesland in Bentley."

At the Dissolution the manor was granted in the 36th of Henry VIII. to Lionel Tollemache, whose family, in 1582, erected the present hall,* the property thus reverting to the successors of the original owners. The Tollemaches afterwards removed to Helmingham Hall, which they have occupied ever since. They acquired it by the marriage of a Lionel Tollemache with the heir of —— Helmingham, of Helmingham.

The front of Bentley has been much altered and renovated, but the sides and back still preserve the old outlines, and on one face the carved cill to the upper studs is still visible, having shields and floriations in continuous ornament. One shield bears the Tollemache arms *argent*, a fret *sable;* another bears the initials S. T., with the date 1582; a third shield has the initials, L. T.

The present Lord of the Manor is W. J. Deane, Esq.

On the right of the sketch is a fine old detached timber building of most interesting character, now the stables, doubtless formerly occupied by retainers. The farm buildings, especially the great barn, are well worth careful examination, being of bricknog studwork, with high-pitched gables of solid brick.

Cottages at Writtle, two miles from Chelmsford, is an old building, of sixteenth-century work, and formerly a residence of some importance. But little is known of it. It is situated on the south side of Writtle-green, and is now divided up into tenements.

JOHN SHEWELL CORDER.

* In the reign of Henry III. Hugh Tallemache paid a fine to Ipswich for freedom from tolle for himself and his villains in Bentley.

TULLIE HOUSE, CARLISLE.

WE illustrate to-day the Castle-street entrance to Tullie House, Carlisle. Our readers will be conversant with the general history of the undertaking from the description and illustrations which appeared in our issue of May 9, 1891, and the recent correspondence thereon.

The buildings and gardens of Tullie House, and a connecting link to Castle-street, were purchased by a body of subscribers, of whom Lord and Lady Carlisle, the late Bishop Goodwin, and a few others, were the pioneers, and were presented to the Corporation of Carlisle for the purposes of a School of Art, Free Library, Museum, &c.

The Corporation of Carlisle have erected the various buildings required on the site of the north wing of Tullie House, and of a portion of the gardens, and to these buildings this gate house gives access from the main street through a court-yard.

It is built in ashlar of local redstone in irregular courses, the details being treated on a somewhat larger scale than usual, for a lighter coloured material. The turret is roofed in copper, the down spouts, waterheads, and carriers are of lead, and the gates to the archway of wrought-iron, with the City arms worked in the grille.

The front has been carried out from the designs of Mr. C. J. Ferguson, architect, of Westminster and Carlisle.

The illustration is from a drawing by Mr. E. Ridsdale Tate.

ARCHITECTURAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY.—The fourth ordinary meeting of the forty-sixth session of this society was held on Monday in the Royal Institution, Colquitt-street. Mr. H. Hartley, the President, was in the chair, and Mr. W. H. Bidlake, M.A., of Birmingham, read a paper on "Imagination in Planning." We have no space to devote to the paper this week, but we may be able to return to it next week.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The ordinary monthly meeting of this Society was held at the School of Art on the 16th inst. Mr. E. M. Gibbs presided, and a paper was read by Mr. H. W. Lockwood on "Symbolic Architecture," in which no attempt was made to trace symbolic forms to their origin, this more serious treatment being reserved for a future occasion. The writer, taking some of the most recent and best-known architectural works in the city, attempted to deduce from their design evidence of symbolic intentions on the part of their designers, and it was urged that, to be thoroughly successful, a building should by its design tell the beholder for what purpose it was designed. From the discussion which followed, it transpired, however, that the symbolism discovered in the buildings had had no existence in the minds of the designers.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—The annual dinner of the Leeds and Yorkshire Architectural Society was held on the 8th inst. in the Queen's Hotel, Leeds. The chair was occupied by Mr. George Bertram Bulmer, the President. After dinner a toast-list was gone through, and the Chairman prefaced it with a sympathetic allusion to the demise of the late Mr. W. J. Mettam, who had acted as honorary secretary to the society. Mr. George Cobson proposed "The Army, Navy, and Volunteers," and Colonel E. Wilson responded. "The City and Commerce of Leeds" was proposed by Mr. Leonard Cooper, and responded to by Alderman Hepworth, President of the Leeds Mechanics' Institute. The toast of "The Royal Institute of British Architects and the Allied Societies" was proposed by Mr. W. H. Thorp. He said the Institute and allied societies existed largely for the purpose of promoting intercourse between the various members of the profession, in bringing subjects of architectural interest before them by means of papers read at the meetings of the various societies. They also kept in view the education of the younger members of the profession. The Institute of British Architects might be looked upon in the light of a sort of University. It was not an educating body, but it was an examining body. Those examinations had been largely taken advantage of by the younger members of the profession. Mr. William Emerson, honorary secretary of the Institute, replied. He alluded specially to the meeting held in Liverpool, the outcome of which was the establishment of a scheme to assist young gentlemen who proposed to enter the profession, and who were situated at long distances from the large towns, and found difficulty in obtaining the means of study. The Institute and the allied societies now formed a centre for the purpose of supplying information to the younger students, and there was every hope that the effort would yield good fruit. At the present day the motto was union was strength; but there was a certain number of professional men who, for some reason, held themselves aloof from their brethren, and indulged in jibes and sneers at them. Such conduct did not advance architecture or the profession of the architect. Those things showed how much need there was for architects to unite to uphold the honour and dignity of their own profession. Mr. Edward Solomons, of Manchester, also responded. He said the idea the public had as to the means the architect had at his disposal to produce the buildings he did was quite extraordinary. They must let the public know that there was something in the architect beyond the mere builder. Mr. Edward Mitchell-Gibbs, of Sheffield, in contributing to the response, said he was disappointed to find that so little had come of the proposal to establish a chair of architecture for the northern societies. In his opinion, the only way to meet the difficulty of the education of architects was to establish in some part of the country an architectural college, possibly in the northern district, by a combination of such provinces as Liverpool, Manchester, Leeds, Sheffield, and Nottingham, all of which were within easy railway communication of each other. The Royal Institute should, as soon as it could, abandon its position as an examining body, and undertake the teaching of the architects of the country. To him there was nothing more painful in the present style of architecture than the want of proportion. Some architects did not seem to have the slightest notion of it. As an example of noble proportion, he cited the Leeds Town Hall, which, in his opinion, was one of the master productions of the present century—remarkable for its splendid outline and masterly restraint, a standing protest against the present style of architecture, with its affectation of irregularity and confusion of plan. The toast was responded to by Mr. Alfred Henry Paget, of Leicester, and Mr. William Hepper, of York. Mr. William Emerson proposed, "The Leeds and Yorkshire Architectural Society." In the course of a short speech, he expressed disapproval of Mr. Gibbs's suggestion that the Institute should be an educational body. It was, he thought, quite an unreasonable suggestion, and he was of opinion that the education of architects should take place before they had anything to do with the Royal Institute of British Architects. In responding, the Chairman alluded to the success which had attended the operations of the society. "Literature, Science, and Art," was proposed by Canon Scott, and responded to by Mr. J. J. Wilson and the Rev. J. H. Dudley Matthews. The last toast was, "Our Guests," proposed by Mr. E. J. Dodgshun, and responded to by Mr. John Harrison, the Town Clerk.

CARLISLE ARCHITECTURAL, ENGINEERING AND SURVEYING ASSOCIATION.—At a meeting of this Association held on the 10th inst. in the Town Hall, a lecture was given by Mr. Wm. Pogson on "Tramways." Mr. Higginson presided. Dealing with the origin and development both of the ways and methods of haulage, details and sketches were given and explained of the different systems adopted from time to time both in this country and abroad, especially in America, up to the latest method of girder rail and way now universally adopted for mechanical haulage, and as laid down in 1893 by the Huddersfield Corporation, the only Corporation up to the present time which has laid down, worked, and developed their own line. The various systems of electric and steam haulage were also explained and illustrated, and the advantages and disadvantages of each for different towns were also dealt with, together with the cost of the systems already laid down. A discussion followed and a vote of thanks was passed to the lecturer.

EDINBURGH ARCHITECTURAL SOCIETY.—A meeting of the Edinburgh Architectural Association was held on the 10th inst. in the Royal Institution, Mr. W. W. Robertson presiding. The Chairman referred to the loss sustained to the Association through the deaths of Mr. Thomas Henderson and Mr. J. M. Bryson. Upon the motion of the Chairman, Mr. David Robertson, A.R.S.A., was elected a member of the Council. Photographs of ancient buildings in Ceylon were exhibited by Mr. A. Muirhead. A paper by the Rev. Robert S. Mylne, F.S.A. (Lond.), on "The Influence of the Mylnes on the architecture of Edinburgh," was read by the Chairman. No individual name of any of the early architects, he stated, stood out as the originator of a single style of architecture. Singularly few names were connected with any of the vast Gothic cathedrals scattered over Europe. In the case of the family of Mylne, the name was connected with a vast number of structures through a long period of time. Abbot Alex. Mylne, the earliest, was a famous mason in the reign of James III. John Mylne, of Perth, at the request of the Town Council of Edinburgh, completed an ornamental statue of James VI. at the Netherbow Port. He also constructed the City Cross and a water pond at Holyrood in the reign of Charles I., besides making the celebrated sun-dial in the Royal Gardens at Holyrood. His son John succeeded to the office of master mason, and under his direction the Tron Church was completed in 1647. He also repaired the great east window in St. Giles' Cathedral. Robert Mylne, of Balfargie, was best known as the builder of Holyrood Palace, which had been maintained almost unaltered for two centuries. In 1674 he busied himself in introducing a large water supply at the head of the West Bow. Mylne's Square,

Writers' Court, and the steeple of Heriot's Hospital also presented proofs of his industry. In 1745 the Edinburgh Royal Infirmary, in the Classical style, was completed by Thomas Mylne, of Powderhall, the eldest son of whom, settling down in London, constructed Blackfriars Bridge. The most important work of the latter in Edinburgh was St. Cecilia's Hall. William Mylne, his brother, built the North Bridge, which was the last important work executed by the Mylne family in Edinburgh. The palace of Holyrood was by far the most important structure connected with the name of Mylne. It was perhaps a little gloomy, but had the reigning King not objected, there would have been more external decoration. In all their work there was some want of originality, but it was the part of a wise man to adhere to the unsurpassed models of antiquity which still existed.

ARCHÆOLOGICAL SOCIETIES.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—The annual general meeting of this society was held in the library of the Royal Dublin Society's House, Kildare-street, on the 9th inst. Mr. John Ribton Garstin, F.S.A., senior Vice-President, occupied the chair. The report of the Council for the year 1893 was submitted. It contained a reference to the death of the President, Lord James Wandesforde Butler, "the last survivor of that band of pioneers who, forty-four years ago, in the City of Kilkenny, laid the foundation upon which the Society has been raised." The report also stated that there are now upon the roll of the Society the names of 189 Fellows and 1,051 members, the total number of names, 1,240, being 50 more than at the close of the year 1892. The Photographic Committee, which was formed twelve months ago, held several meetings during the year. Mr. J. L. Robinson had consented to act as hon. curator of the collection, and considerable progress had been made in classifying, according to counties, the existing photographs of antiquarian objects. The index to the first nineteen volumes of the "Journal" is now practically completed, and will shortly be ready to go to press; also the catalogue of the objects in the museum of the society in Kilkenny, which is being prepared by Mr. J. G. Robertson. The meeting next proceeded to elect a President for the year 1894. The following gentlemen had been nominated:—Rev. Denis Murphy, S.J., M.R.I.A.; Mr. Thomas Drew, R.H.A., F.R.I.B.A., Vice-President, and Lord Walter Fitzgerald. Lord Walter Fitzgerald withdrew his name, and the voting took place between the two first mentioned gentlemen, with the result that Mr. Drew received 57 votes and Father Murphy 44. The Rev. George R. Buick, Vice-President, read his second paper on the Crannog of Moylarg. Mr. T. J. Westropp read a paper descriptive of the Franciscan Priory of Ennis, and the tomb of O'Brien, King of Clare, found therein, which is remarkable for the panels of grey marble, on which there are designs of German origin, depicting Scriptural subjects. Colonel P. D. Vigors exhibited ancient leg-fetters, found in County Carlow; stone axes found in New Caledonia, French specimens of stone axes, and an aboriginal stone hammer from Australia. Mr. Robert Cochrane, hon. secretary, announced that by permission of his Grace the Archbishop of Dublin the members would have an opportunity of visiting the recently-discovered pagan sepulchral mound in the grounds of Old Connaught, Bray.

SOCIETY OF ANTIQUARIES OF SCOTLAND.—The usual monthly meeting of this Society was held on the 8th inst., Mr. Gilbert Goudie in the chair. The first paper was an account by the Rev. George Lowe, B.D., of a cemetery of the Bronze Age, containing eighteen urns, recently discovered at Kirkpark, Musselburgh. The second paper was a notice of the church bell and some other antiquities at Kettins, Forfarshire, by Mr. Alexander Hutcheson, F.S.A., Scot., Broughty Ferry. A small sepulchral slab, with a Calvary cross and a pair of shears incised on one side, and other architectural fragments discovered in the course of some recent alterations in the church were described, and the inscriptions and arms on the parish communion cups noted. In the next paper, Mr. J. M. Mackinlay noticed the various localities in East Lothian associated with the memory of St. Baldred, who was said to have chosen the Bass Rock as his retreat. The last paper, by Mr. F. R. Coles, dealt with the stone circle at Holywood, Dumfriesshire, chiefly with reference to the so-called cup markings on some of the stones in the circle, as mentioned by the late Professor Sir J. Y. Simpson. These, however, on careful examination, the author found to be mostly if not altogether natural.

Correspondence.

To the Editor of THE BUILDER.

"STAINED GLASS AND DESIGNING."

SIR,—In your notice on p. 490, December 30, of Mr. A. Pilkington's window, you say that the drawing was exhibited in my name at the Royal Academy. And in your note to the letter of "Δ," on p. 39, 13th inst., you say that you gave the facts as communicated by the architect.

Are these statements fair to me, or accurate? Till you told me, I was not aware that any drawing bearing my name, or with which I had in any way to do, was in the Royal Academy. And even then I had no idea what it could be. I wrote to you, in reply, at the time explicitly, to this effect. Whoever sent the drawing took a great liberty in sending it under my name, without my knowledge or consent. In the *Builder* it is suggested that I have assumed a position to which I had no right, and that I have taken credit for other people's work. I have not done so.

The facts do not justify any such suggestion or inference. Your withholding my statement that the drawing in question, sent to the Royal Academy in my name, was so sent without my knowledge or consent, gives the whole affair an entirely wrong complexion.

It is a mistake to regard a stained-glass window as if it were an independent picture that can be placed, or hung up, anywhere. To be thoroughly successful, it must suit its surroundings. The building is not to be regarded as little more than a frame for the stained glass. Stained glass—if worthy—is a part of the decoration of the building, and as such should come under the direction and control of the architect, who should, to say the least, be able to prevent mistakes of scale, position, and colour, being made. An architect who has studied the subject should be able to do much more than this.

J. MEDLAND TAYLOR.

*** We did not recollect that Mr. Taylor had distinctly disclaimed having sent the drawing to the Academy, but we now find that the drawing was sent by Messrs. Heaton, Butler, & Bayne, with their name on it and the words "under the superintendence of Mr. Medland Taylor, and the R.A. Secretary adopted the latter name in the catalogue. So far, therefore, we have unintentionally implied what was unjust to our correspondent. At the same time, we remember that, in the course of some correspondence on the subject, when we wrote to ask him if we could publish the drawing, Mr. Taylor entirely defended the architect's claim to the design in such a case; and we may add that to the description of the window which he sent us he appended a long and enthusiastic comment on the admirable result which had followed from the co-operation of the architect and his client in the design, which we omitted as irrelevant, as well as for other reasons.—ED.

THE STRUCTURE AND PHYSICAL PROPERTIES OF BUILDING STONES.

SIR,—Referring to the observations made on p. 20 of your issue of 6th inst., what the writer says respecting a gang of quarrymen sometimes migrating from one quarry to another and taking the quarry-mark with them is quite correct in many instances, but my predecessors and myself in connexion with the quarries now worked by myself, foresaw this difficulty many years ago, and have always insisted that each separate *quarry*, and not each distinct gang, shall have a mark of its own. Therefore, the quarry-marks in our instance are stationary, and do bear a practical value to a certain extent, and are not migratory in the manner the writer has mentioned. Some architects have occasionally specified stone to come from a certain quarry, bearing a certain quarry-mark, and have put into their specification a clause which it is impossible to fulfil, no matter who may profess otherwise, because I suppose upon the average it may be definitely reckoned that no separate quarry gang is able to produce more than about 500 tons of stone per annum from one quarry, and in large jobs there are frequently thousands of tons of stone required, and it stands to reason that, if the job were to be constructed of stone obtained solely from one quarry, it would take years instead of months to construct the masonry alone.

There is, however, another feature to be considered, and that is: In many instances there are two beds in one quarry, one a weather bed, and one not so. The weather bed is the one, of course, which should be used for exterior work, hence out of the 500 tons which the quarry might produce during the twelve months, not more than, say, 300 tons would be of the weather bed, hence a further argument to show the impracticability of specifying stone from a particular quarry bearing a definite quarry-mark. What presents itself to my mind as being a better way is to specify a locality, before doing which, however, the architect should assure himself that there are a sufficient number of quarries in that locality to produce the stone in the required time to enable him to complete his building.

Moreover, as years go by, the quarry which ten years ago was specified and noted for producing satisfactory stone, is altogether worked out, or worked away from, and one occasionally finds stone now specified to come from a certain quarry which years ago became exhausted, and the stone now being produced, although bearing the same name, as a matter of fact is raised from a spot sometimes hundreds of feet away from the spot from whence the original stone which obtained favour, and was specified, was produced.

A more intimate knowledge of the circumstances respecting quarries and stone seems to me to be required in the profession generally, and I consider the papers you are now publishing in your journal will go a great way towards disseminating that knowledge.

A QUARRY-OWNER.

PRIME COST.

SIR, — Having heard the quantity surveyor's opinion on this subject, perhaps the views of the builder may be of interest, and conduce to a more rational understanding of the principles really involved.

What is "prime cost?" It is first cost, actual cost, or out-of-pocket cost, just which way you like to look at it; that that is its real meaning, I take it, there can be no doubt. All business men, then, to whatever trade they may belong, will be disposed to admit that this out-of-pocket cost of the articles they sell is not a thing which outsiders ought to be made acquainted with, no matter whether it is groceries, drapery, clothes, bread, stoves, gas-fittings, or wall-papers. The customer does not seek to know the "prime cost" of any commodity when he deals direct with a tradesman. Why, then, should his representatives, the architect and quantity surveyor seek to know it.

As you, Mr. Editor, kindly intimated, *prices* are named for certain things, because there is no other convenient way of describing the quality required; but the usual clause in "quantities" about "all prices mentioned being clear of trades discounts" is a gross piece of impertinence, which the customer himself is not guilty of when dealing direct with a builder, and our contention is that neither of his agents should arrogate to themselves the right to do that which their client would never dream of doing.

To do architects justice, they rarely meddle with trade discounts when, as is often the case, they go direct to the builder for an estimate, it is only when Mr. Quantity Surveyor, with his usual bouncing dictatorial inquisitiveness, appears on the scene, that trouble arises.

The assertion by Mr. Leaning that quantity surveyors are always conversant with the discounts received by builders seems to me to prove too much. It is either empty bluster, and, as such, reprehensible; or, if it is true, there can be no occasion for wanting the invoices at all, for the individual who selects the articles under a provision would naturally keep account of the prices of them; or, again, if it is true, it can only be by underhand methods, which no men of repute would stoop to commit.

In spite, however, of what surveyors may do, this P.C. will always remain more or less a will-o'-the-wisp, and the most stringent clauses for reaching it will always be frustrated by the ingenuity of builders, backed up, as they always will be, by the sympathetic feeling which subsists between those engaged in trade. The depths of what Mr. Leaning calls "meanness" on the part of merchants and manufacturers, but which is merely justifiable secrecy, has never yet been plumbed, and never will be plumbed. So long as inquisitive outsiders attempt to meddle with trade discounts, so long will there be subterfuges and concealments.

The extremely childish remark upon the reticence of builders in this matter is unworthy of a man in Mr. Leaning's position; he ought to know that it is a characteristic of every trade, including also the quantity surveying profession; for I take it that even they would not like the customer to know the "prime cost" of preparing the quantities.

Let us away with all this meddlesome interference with trade discounts. It took some little time to convince architects that quantities ought to form part of the contract;* a little reflection will convince them that they are on the wrong tack in this matter also, when they allow the surveyor to put P.C. instead of list values of articles.

Competitive profits only are more likely to be paid by quoting catalogue prices than fallacious P.C's., for the builders desirous of getting the job (there would be no competition unless this desire existed) would in some way make allowance when they felt confident of receiving the trade discount, either by putting the fixing at a low rate, or knocking something off the main total.

To take an opposite illustration of the principles involved, supposing 100*l.* to be provided for some-

* Some of us are not convinced of that yet.—ED.

thing, the quantity surveyor at the usual rates would get 2*l.* 10*s.* 0*d.* for simply writing two lines. "Oh! but," he will immediately exclaim, "it is the remuneration for the whole bill which ought to be considered." Just so, and for the same reason it is the profit on the whole contract which ought to be taken into consideration, and not the discounts or profits on particular items.

A BUILDER'S MANAGER.

THE FLUSHING OF WATER-CLOSETS.

SIR,—You have been good enough to notice in your last issue a supplementary catalogue of special water-closet apparatus which I have lately introduced, and having reference more particularly to my new syphonic discharge apparatus, "The Closet of the Century." I note that you refer to the "amount of water" necessary to efficient flushing, but which is at present restricted by the water companies' regulations to 2 gallons; and while there is no doubt that the purely *mechanical action* (by which water companies' engineers would apparently endeavour to justify such regulation) can be effectively performed with this very limited quantity, I unhesitatingly assert that the experience of practical sanitarians, demonstrated by results of tests recently published by the Sanitary Institute, unquestionably confirm the opinion always advocated by me that something more than this is required, and that a minimum flush of 2½ or 3 gallons to a maximum of 3½ or even 4 gallons (in accordance with local circumstances and the requirements of position in relation to the drain) is absolutely essential to an efficient sanitary result.

For example, it has already been conclusively shown that a two-gallon flush discharged through any ordinary form of flush-down closet, fixed at the head of a 4-in. branch drain, is valueless for the purpose designed, of conveying excreta direct to the sewer, and days must often elapse before this is accomplished.

Herein is to be found one of the many advantages of "The Century W.C.," one to which you do not allude, and to which I would specially desire to refer: whereas in the ordinary form of flush-down closet, the discharge into the drain can be neither more nor less than the equivalent of the capacity of the 1½-in. down service pipe from the cistern, in the "Century W.C." the syphonic discharge ensures an independent flush equivalent to the area and capacity of a 3-in. soil pipe (which can be used without fear of stoppage), and continuing until the much larger quantity contained in the basin as well as the contents of the cistern are exhausted, and ejected with the increased velocity due to atmospheric pressure.

These closets may be seen under the conditions of actual use in the new underground convenience for the Strand District Board of Works, Wellington-street.

GEORGE JENNINGS.

THE COMPETITION GUINEA.

SIR,—I find advertised in your issue of the 13th inst. a new form of lottery. Architects are invited by the Liverpool School Board to send a guinea to their clerk, in return for which they will receive particulars of premiums, &c., for a competition. Having received them, one may find it worth while to send in a design, or the best thing to do may be to put the particulars obtained in the waste-paper basket, but, however unacceptable the conditions may be, it would seem he can only get his guinea again by sending in a set of *bonâ-fide* plans.

EDGAR A. HAWKINS.

*** It is not a new practice, though of rather recent introduction. We have already more than once expressed our opinion strongly against it, as the architect cannot tell till he sees the conditions whether they are such as he would be willing to compete under.—ED.

NORTH BRIDGE, EDINBURGH.—Dr. Rowand Anderson, at the meeting of the Edinburgh Architectural Association on the 10th inst., in moving a vote of thanks to the Rev. Mr. Mylne for a paper read to the Association, said that the North Bridge had considerable merit; but what had been done to it in the present day had not added to that merit. A more helpless production than the present North Bridge did not exist in the city of Edinburgh. In plans for a new bridge it was to be hoped that the claims of architecture would not be kept in the background altogether. If it were to be looked upon solely as a piece of engineering—a span to circle space irrespective of everything else—it would be a great misfortune to the city of Edinburgh. The bridge occupied one of the most remarkable sites in Europe. If the citizens did not insist upon a design worthy of the reputation of the city it would be a blot that would remain on Edinburgh for generations, and would stare everyone in the face. Mr. S. Henbest Capper, in seconding, said the metal cantilevers of the North Bridge were not particularly effective, for whenever a crush occurred passengers were ordered to the street. Were the names of architects more commonly associated with their work, fewer architectural monstrosities would be perpetrated.

The Student's Column.

THE STRUCTURE AND PHYSICAL PROPERTIES OF BUILDING STONES.—III.

TOUGHNESS AND BRITTLENESS.

BY the toughness of stone is meant the relative power of adhesion of its particles to one another, and their elasticity. It is a property essentially dependent on structure, but collaterally also on mineral composition. Brittleness may be described in similar terms, only that it is the converse of toughness. To a certain extent both represent different degrees of the same property, and are closely related to the character of hardness.

As an illustration of this we may remark that certain varieties of Purbeck stone are practically of the same hardness as some of the Portland group, yet in general terms the former would be said to be much more brittle than the latter, which in consequence are described as tougher stones. The cause of this is not difficult to understand when we know something of the microscopic structure of the stones in question. The Purbeck freestones are made up almost entirely of minute fragments of shelly matter in which cleavage structure is apparent, whilst the surfaces of the fragments are also points of weakness. The Portland stones, on the other hand, are made of minute, hard, oolitic granules firmly adhering to one another, and but little shelly matter occurs, whilst no cleavage planes or lines of weakness are observable. When the mason strikes the former class of freestone it is not difficult for him to disengage quite a large flake of the material with one blow of the hammer, the stone readily splits along the innumerable cleavage planes and free surfaces; but to sever a piece of stone of the same size from a block of the latter, many blows of the same force are required, and there would be a general tendency for much smaller pieces to come away, the firm adhesion of the oolitic granules, together with the homogeneity of the material and the absence of lines of weakness, cause it to be much tougher.

We do not imply, however, that a brittle stone is necessarily inferior in quality to a tough one; it may be that, from the point of view of weathering, the former may contain more durable minerals than the latter. At the same time, the purpose for which the stone was required would have to be largely taken into account. If delicate carvings had to be executed therein, no one would select a very brittle material for the purpose. For designs requiring breadth of treatment the character of brittleness would be no great impediment, whilst for ordinary ashlar it might practically be ignored. It should be remembered that the more brittle a stone is, the easier it can be tooled and dressed; for a stone to possess the attribute at all, it must in the first place be rather hard. It is the special features introduced by brittleness that cause variations in the relative cost of tooling certain rocks, and which render it difficult to draw up a perfect "scale of hardness," based on the relative facility of tooling, as explained in our last article.

Important though the relative toughness and brittleness of a stone may be from the point of view of its selection for certain building purposes, these properties have a much wider significance when applied to the choice of road-metal. We may ignore those kinds of "metal" of an earthy description, which every road-surveyor worthy the name knows to be utterly useless materials, and confine our attention to the more crystalline varieties. Toughness is, perhaps, the most essential characteristic of a good road metal, though durability of its component minerals is also highly desirable—especially for country roads. The class of stone used in a busy thoroughfare, however, is usually too short lived—too soon worn away by traffic—no matter what its quality may be, for it to be much affected by agents of decomposition. Take granite for example. As a whole, that rock is very durable, but it varies materially in the matter of toughness. If, for instance, we have one of an exceedingly compact nature, fine grained, the microscopic structure of which shows that its component crystals are intimately interlocked, or associated with each other, that will be a much tougher granite, and make a better road metal than one in which the crystals are larger, much cleaved, or twinned, and simply adhere to each other.

The character of toughness as applied to roofing slates is most important; if a slate is not tough it is of no use. The stronger the slate, the greater its toughness, and the less its porosity. Landings and large paving stones also must possess this quality in an eminent degree.

The methods hitherto adopted of ascertaining the toughness or brittleness of building-stone are not very satisfactory; and but few tests for these properties have been carried out—at least in this country. In a somewhat exhaustive examination of the building-stones of the State of Minnesota, Professor N. H. Winchell gives* the comparative facility of dressing the materials concerned, and he was able to state, as a result of his inquiry, that those elements in general which go to make up a very durable building-stone, and thus act affirmatively for the stone as a part of the structure, also go to make it incorrigible in the builder's hands, and to that extent act negatively. The tests for facility of dressing operated disastrously on the crystalline rocks, and wholly to the advantage of the softest ones. The variation in texture induced by lamination, or accompanied by it, naturally affects the toughness of many stones, particularly those of the sandstone class. Professor Winchell does not tell us precisely how he compiled his statistics relating to facility of dressing; we should have been glad of information on that head.

The toughness of slates is not a difficult matter to ascertain, though here, again, but few tests have been carried out by scientists. A method adopted in the United States which determines the strength, toughness, and elasticity of the material at one operation may be described as follows:—Slabs of slate 24 in. in length, by 12 in. in width, and ¼ in. in thickness are supported in a horizontal position upon wooden knife edges 22 in. apart, the loads being applied upon another knife edge placed half-way between the supports. The ultimate deflection of the slate in the centre, just prior to its breaking, is then carefully ascertained, and the results give the toughness or elasticity of the material. It is obvious that for slabs, landings, and the like the toughness of the stone is practically coincident with its tensile strength, and we reserve further remarks on this head until we come to deal with that property.

ABSORPTION OF WATER.

All building stones contain a certain quantity of water, some of which is inherent to the material as a chemical property, whilst some—by far the greater amount—has been imbibed by it temporarily. The latter soon evaporates after the stone has been quarried; or, at least, a very large proportion of it does. Stones vary widely in regard to the amount of water they can absorb, depending on their structure and state of crystallisation. Whilst some absorb water rapidly, and transmit it freely, others imbibe it more slowly and retain the fluid for a much longer period.

A great number of tests to ascertain the ratio of absorption of water by British building stones have been carried out from time to time, and before criticising these we may profitably describe divers methods of arriving at the results. We desire to call the student's attention specially to this matter, as it has a direct bearing upon a considerable number of our own experiments.

Professors Daniell and Wheatstone show† the bulk of water absorbed by the stones when saturated under the exhausted receiver of an air-pump. They remark that the quantity of water absorbed in this process may be considered to represent the space occupied by the pores or interstices in the substance, unless we suppose that in some cases the adhesion between air and the solid particles is so great that the entire removal of the atmospheric pressure is not sufficient to counteract the force. It is certain, they state, that when this pressure is not removed, long immersion in water will not occasion the displacement of all the air contained within the pores.

Professor W. C. Unwin, F.R.S., says‡ that in the determination of the porosity of stone the specimens should be cubes, and well dried. They should be brushed, weighed, and then gradually immersed in water, remaining there until saturated. The stone will become nearly saturated in twenty-four hours, but it may, for certainty, be left in water for five days. It should then be taken out, carefully dried on the surface, and weighed. For strictly comparable results the specimens should be of the same volume and surface. In a series of experiments carried out under his supervision, 3-in. cubes of stone were

* "The Geology of Minnesota;" Final Report, Vol. I. (1884), p. 196.

† "Report on the Selection of Stone for Building the new Houses of Parliament," 1839, p. 36.

‡ "The Testing of Materials of Construction," 1888, p. 426.

used, and immersed in water for from seven to fifteen days.

Professor Wilber determined* the percentage of water absorbed by dry samples as follows:—Specimens weighing about 50 grams were used. They were dried in an air bath to a constant weight at 212 deg. Fahr., and were then immersed in cold (previously boiled) distilled water, and after complete saturation, were removed one by one from the water, their surfaces quickly dried with blotting-paper, and were again weighed. The percentage gained in weight by the saturated sample was then computed:—

$$\text{Per cent. gained} = \frac{\text{Weight of wet sample} - \text{Weight of dry sample.}}{\text{Weight of dry sample.}} \times 100.$$

Professor T. Hudson Beare† used dried 2½ in. cubes, which, after being measured and weighed were lowered gradually into a vessel of water and left there for a period of six or seven days. At the end of that time the stones were taken out, wiped with a dry cloth to remove adherent water, and at once reweighed. The results are expressed as a percentage of the original weight. The water used for dealing with some of the specimens was derived directly from a water company's main without special treatment, whilst for others pure distilled water was employed. Professor Beare remarks that to be at all comparative, absorption tests must be made on cubes of the same size, and it is therefore not easy to compare one set of observations with another where this condition is not complied with.

Mr. Mansfield Merriman ascertained‡ the porosity of slates by immersing in water for twenty-four hours specimens previously dried at a temperature of 135 deg. Fahr., and noting the increase in weight.

So we see that none of these observers have adopted precisely the same methods in estimating the ratio of absorption of water: and none of the results are, therefore, strictly comparable with each other. It is important to bear that fact in mind in reading what follows.

OBITUARY.

M. CÉSAR DALY.—On the 11th inst. the death took place, at Wissous, his residence in France, of M. César Daly. He was born in 1811 at Verdun His childhood was passed in England, but at the age of fifteen he returned to France, completed his education at Douai, and adopted architecture as his profession. He studied at Paris under Duban, who assisted him, in 1842, to establish the *Revue de l'Architecture et des Travaux Publics*, which he continued to edit till his death. He was the recipient in 1892 of the Royal Gold Medal of the Royal Institute of British Architects, and in the *Builder* for July 2 of that year some additional particulars will be found of his career. An article on his life and work will be found on another page of this issue.

AUGUST FÖLSCH.—Herr August Fölsch, whose works on theatre protection are so well known throughout the world, has just died at the age of sixty-nine. He was the first to take up the subject seriously, and to compile those invaluable statistics on theatre fires which are practically the only absolutely reliable data we have on this class of catastrophe. He first gave attention to the question of theatre protection in 1864, and at his first lecture on the subject, which was delivered at Vienna in 1870, he showed a list of forty-six theatres which had been destroyed. His memoirs, which he distributed among some of his friends in 1889, treated of 936 theatre fires, so that by this time the full thousand must also have been reached. Herr Fölsch's profession was that of a civil engineer, and as such he had an eventful career. According to his memoirs, he was born at Hamburg in 1824, and was first employed as engineer's apprentice on the Hamburg-Bergedorf Railway. From 1842 to 1852—*i.e.*, just after the great Hamburg fire—he was engaged under Walter Lindley, who had charge of the remodelling of the demolished city. He then obtained an appointment under one of the contractors for the Paris-Lyons-Mediterranean Railway, where he eventually became chief engineer. On the completion of this line he obtained an important post on the works for the Austrian Western Railway, and finally took up his residence in Vienna in 1859 as agent to the English contractor, Thomas Brassey. At Vienna he was also occupied with a project, which was eventually abandoned, for the better water supply of the city, and subsequently was identified with most of the Austrian railways built after the war of 1866, concluding with the difficult Vorarlberg line. In 1871 he was one of the engineers sent out to inspect the Northern Pacific Railroad by a group of European financiers, and his unfavourable report was amply justified by the subsequent collapse of the undertaking. In 1872, on the conversion of Thomas Brassey's business into a limited company, he retired to Hamburg, where he resided until his death.

* Jno. C. Smock, "Building Stone in New York," Bull. N.Y. State Museum, Vol. II. (1890), p. 357.
† "Minutes Proc. Inst. C.E.," Vol. CVII. (1892), p. 349.
‡ "Stone" (Indianapolis), Vol. VI. (1893), p. 135.

GENERAL BUILDING NEWS.

PROPOSED NEW SCHOOLS AT NEWHALL.—The Stanton and Newhall School Board are about to build a new block of schools at Newhall to accommodate over 1,000 children. Mr. Henry Beck, of Burton-on-Trent, is the architect.

CLUB BUILDINGS, DARTFORD, KENT.—A new Conservative Club has just been opened at Dartford. The frontage to the main street has four gables, with stone copings, &c., and under two of these are the entrances to the club, and to the covered way to the Conservative hall, which is in the rear of the club-house. The entrance-doors are of teak, with iron grilles, leading to a lobby, and a large hall, with staircase of pitch pine, and a panelled ceiling. The dining-room, 26 ft. by 18 ft., and the reading-room, 20 ft. by 18 ft., open from the hall; and behind is a billiard-room for two tables (with top lights and hot-water pipes), a steward's bar and lavatories, &c. The building will cost about 3,100*l.*, and has been carried out by Mr. T. W. Haylock. The grates were supplied by Messrs. Barnard & Bishop, and the mosaic pavement by Messrs. Carter. The architect is Mr. A. J. Style, of Westminster.

CHANCEL SCREEN, PATSHULL CHURCH, STAFFORD.—The Bishop of Lichfield recently dedicated a screen erected in Patshull Church to the memory of the late Earl of Dartmouth. Mr. W. C. Banks, architect, of London, who effected alterations and additions to Patshull Church for the late Earl, designed the screen, and Messrs. Jones & Willis, of London and Birmingham, executed the work. The screen is of hammered iron of an ornamental design. It divides the chancel from the main body of the church, and is surmounted by a cross. The church itself, which is dedicated to St. Mary, is an edifice of stone, in the Italian style, consisting of chancel, nave, north aisle, south porch, and a tower surmounted by a dome, and containing six bells. It was restored by the late Earl in 1874, when a new north aisle and vestry were added, and choir stalls and a new lectern and pulpit. The whole church was at the same time re-seated. Several stained-glass memorial windows were also placed in the church.

LADY CHAPEL, BRISTOL CATHEDRAL.—The Elder Lady chapel of Bristol Cathedral, which has undergone restoration, has just been re-opened. The stone has been repaired and cleaned, the paint that covered the walls has been removed, the carving and injured columns have been made good, and the floor has been taken up and relaid with a view to provision being made for heating. The eastern end of the chapel has been raised, and altar steps have been provided. The roof, which was in a broken and dangerous condition, has been made good, and the groining renewed where necessary; the old plaster has been taken off the stone work, and the whole has been pointed. The doorway on the north side has been built up. While this was being done, evidence was discovered that the doorway was inserted at a later date than that of the construction of the chapel. In the place of the doorway the window over it has been made the same size as the other windows, and the arcading has been continued. The archway opening into the north transept, which was in a dilapidated condition and shored up, has been opened. Messrs. W. Cowlin & Sons have carried out the work, under the direction of Mr. Pearson, R.A., the architect.

POLICE STATION BUILDINGS, SHREWSBURY.—The Mayor of Shrewsbury, Mr. W. Lyon Browne recently opened the new police station and offices which have been erected for the borough. The buildings are from the plans of Mr. J. Johnson, the contractor for the work being Mr. H. Price, a local builder. An office is provided for the Chief Constable, also a parade-room, five cells, and an office for the Inspector of Weights and Measures. Under the same roof are residences for the Chief Constable, the Chief Inspector, and one sergeant. The buildings are all of brick, with stone facings.

CATHOLIC SCHOOLS, HUDDERSFIELD.—The new schools which have been erected near Queen-street South, Huddersfield, were recently opened. One portion of the schools for the present forms a chapel, capable of containing 400 people, and thus arranged the whole available space can be occupied on Sundays, and give room for 600 people. The chapel is furnished with three altars, and lighted by stained-glass windows, the principal light depicting St. Joseph, in whose name the chapel is erected. The architect is Mr. Edward Simpson, of Bradford, and the builders Messrs. W. Radcliffe & Co. The total cost is about 2,300*l.*

TOWN HALL, COLNE, LANCASHIRE.—On the 13th inst. the new Town Hall at Colne was opened by Mr. Samuel Catlow, Chairman of the Colne Local Board. The new Town Hall is built of Yorkshire stone facings, backed with brickwork. The assembly-room is finished in oak, with open timbered roof. In the spandrils of the windows are leaded lights, with coats-of-arms and subjects illustrative of the trades of Colne. The floor is of pitchpine boards, narrow widths. The staircase is of oak, and the entrance porch has a high dado and screen of oak. The clock and bells have been supplied by Messrs. Potts & Sons, of Leeds; and Mr. Seward, of Lancaster, has carried out the heating arrangements. The contractors for the new building have been—stone and brickwork, Messrs. Hawley, Colne; joinering, Messrs. Riddiough & Co., Colne; plumbing, Mr. Binns, Colne; plastering, Mr. M. Haworth, Colne; slating, Messrs. Thornton Bros., Otley; painting, Messrs. Berry & Duckworth, Colne. The original plans for the building, which has cost about 10,000*l.*, exclusive of the site, were made by Mr. Mallinson, Surveyor to the Board, but the work has been finished above the ground floor level by Messrs. J. W. & R. F. Beaumont, architects, Manchester.

NEW PREMISES FOR THE SOUTH WALES INSTITUTE OF ENGINEERS.—On the 12th inst. the new Institute building for the South Wales Engineers, situated in Park-place, Cardiff, were opened. The new building is in the Renaissance style, and the material used in its construction is red brick, with red stone dressings. It stands back about 30 ft. from the roadway, and has a frontage on to Park-place of 66 ft., while the average depth of the building is 100 ft. It is intended to enclose the building with massive iron railings and boundary walls, and a circular carriage drive will run up to the entrance doorway. Over the main entrance are representations of the arms of Wales and the arms of the borough of Cardiff in different panels. The work of erection was started in July, 1891, but was considerably delayed in consequence of the strike in the building trade. The hall of the building is 17 ft. by 33 ft., and 14 ft. high, and the floor is mosaic, the in-laying having been executed by Italian workmen. The rooms on the ground floor consist of a secretary's office and writing-room, library and council-chamber (39 ft. by 22 ft.), cloak and attendant's room, lecture theatre (40 ft. by 42 ft., and 21 ft. high), with sitting accommodation for about 200 persons; lecturer's retiring-room, and suite of lavatories. There are two strong rooms in the basement, a room for the heating apparatus, and a museum room (54 ft. by 21 ft. 6 in., and 8 ft. 3 in. high). The second floor, which will be used by the South Wales Coalowners' Association, is ascended by means of a staircase, constructed of concrete and iron, encased in carved teak wood with elm treads. On the second floor is the sliding-scale committee-room, general conference-room, waiting and writing rooms, a room for the workmen's representatives on the sliding-scale, secretary's offices, a spare room, and a suite of lavatories. The upper portion of the building will be occupied by the caretaker. The building is lighted by electricity. Messrs. Verity & Co., of London, supplied the fittings. The rooms are heated by hot water. The architect of the building was Mr. Edwin Corbett, of the Bute Estate Offices; Messrs. William Thomas & Co., of Cardiff, were the contractors, and Mr. H. Wale the clerk of the works. The building will cost (including the furnishing) about 10,000*l.*

BOARD SCHOOL, HURST HILL, STAFFORDSHIRE.—The memorial-stone was laid on the 8th inst. of new Board Schools at Hurst Hill. Plans were prepared by Mr. A. P. Brevitt, architect, and the work has been given to Messrs. T. Jones & Son, builders, Sedgley. The building consists of two blocks, one to accommodate 200 children in the mixed department, and the other 150 infants. The school is built of red brick, with terra-cotta work, and Gornal stone facings. They will be lined inside to the height of 4 ft. with glazed bricks. The floors will be made of wood blocks, and the rooms will be heated by Messrs. Shillitoe & Shorland's hot-air grates. The ventilation will be on the latest principles, and the playgrounds are to be asphalted.

PROPOSED ENLARGEMENT OF THE PRESCOT WORKHOUSE.—The Guardians of the Prescot Union have decided to take steps forthwith to erect buildings for the accommodation of a large number of inmates over the present accommodation. Mr. W. Gandy, architect, St. Helens, is engaged on the plans.

PUBLIC CONVENIENCES, HYDE PARK.—The Vestry of St. George, Hanover-square, opened on Tuesday the new public conveniences which have been erected in Hyde Park, close to the Marble Arch. The building, which is divided into two sections, for ladies and gentlemen respectively, is partly underground, the section for ladies being above ground. This part of the structure is built of brickwork, faced, on the outside, with Portland stone, and on the inside with white glazed bricks. It contains eight closets and an attendant's room, and in addition there are a private lavatory with closet, and a so-called "public" lavatory, without closet, but with two lift-up hand-basins. The pavement is by Messrs. Minton & Co. The gentlemen's department, which is underground, and which has four entrances, contains 72 urinals, 24 water-closets, two attendant's rooms, two lavatories with six lift-up hand-basins in each, and a store-room. It is built of brickwork, faced, inside the building, with white glazed bricks. It is surrounded above the ground level by a balustrade of Portland stone. The urinals are constructed of polished rouge royal marble with fireclay backs in white enamel, and are flushed by the discharge of water from

glass tanks fixed above them, the tanks being timed to discharge alternately, providing thereby a constant flush. The flooring is of asphalte, laid by Val de Travers, and the building is lighted by skylights. In both departments the electric light and gas are provided, the electric light being executed by the Planet Company. Bostwick folding gates have been used in the gentlemen's department, and in a backyard are two free closets—the only free closets that have been constructed, for all the other closets, in both departments, are provided with Maskelyne's penny-in-the-slot locks. The drainage and sanitary work has been carried out by Messrs. Boulding & Sons. The total cost of the works was under 8,000*l.*, and the whole has been constructed by Messrs. Bywater & Sons, builders, from plans and specifications prepared by Mr. G. Livingstone, C.E., the Surveyor to the Vestry. Mr. D. Pratt was the general foreman.

SANITARY AND ENGINEERING NEWS.

CITY OF ROCHESTER SEWERAGE.—On the 9th inst., Major-General Phipps Carey, R.E., one of the Inspectors of the Local Government Board, held an inquiry at the Guildhall, Rochester, with reference to the application of the Town Council for authority to contract a loan for carrying out sewerage and sewage disposal works for the Borstal portion of the district. The Town Clerk, Mr. Prall, stated that a drainage scheme had been rendered necessary in consequence of the mandamus having been issued by the High Court of Justice, at the instance of the Local Government Board. The Town Council then applied to engineers for drainage schemes, and out of several received, had unanimously decided in favour of that prepared by Messrs. John Taylor, Sons, & Santo Crimp, of Westminster, and sanction to carry out which was now desired. Mr. Santo Crimp, M.Inst.C.E., gave a general and detailed explanation of the proposed works, and said that the sewers would be laid in straight lines and at self-cleansing gradients; there would be man-holes and inspection chambers at each change of direction or gradients, and at all junctions of branch with main sewers. The system would be thoroughly provided with ventilators, and with automatic flushing arrangements at suitable points. With regard to the method of dealing with the sewage, land of a highly suitable character for sewage purification could be obtained in the neighbourhood at a reasonable cost, but before applying the sewage to the land the "Wimbledon" system would be employed for the purpose of removing the suspended matters. Mr. Crimp had had a long experience of this system, and with certain modifications, rendered necessary by the new conditions, he could confidently recommend its adoption. The "Wimbledon" system consisted of a combined settling-tank and nitrifying filter, and not only were nearly all the suspended matters removed, but some of the organic matter in solution was also broken up. As a result large volumes of the partly-purified sewage could be applied to land without causing any nuisance, or injuring the crops. The system had the advantage also of reducing the sludge to a minimum, since chemicals were not necessary in the process. The Inspector visited the site of the proposed works, and will report in due course. There was no opposition to the scheme.

SEWERAGE WORKS, HORFIELD, NEAR BRISTOL.—Colonel W. M. Ducat, R.E., the Local Government Board Inspector, held an inquiry at Horfield on the 5th inst., with reference to an application from the Horfield Local Board and Barton Regis Rural Sanitary Authority for sanction to borrow the sums of 9,070*l.* and 2,878*l.* for works of sewerage and sewage disposal for a portion of their districts. Mr. A. P. I. Cotterell, A.M.Inst.C.E., engineer to the scheme, attended and gave evidence, and stated that the works, as designed by him, consisted of sewers in the Horfield Urban and Barton Regis Rural Districts, converging together to works proposed to be placed in a field where the sewage would be disposed of. About three acres of land would be reserved for disposal works. The system of disposal for which the works had been designed was that of the International or Ferozone and Polarite process. At the close, the Inspector said he felt the scheme was a good one, and that those who opposed it would, by-and-by, look back upon it with satisfaction.

SEWAGE WORKS AT WALSALL.—The new sewage purification works for Walsall, which have been designed and carried out at a cost of 8,000*l.* by the Borough Surveyor (Mr. R. H. Middleton), were opened a few days ago by the Chairman of the Committee (Councillor J. Noake). The total flow of sewage to be dealt with is estimated at about 3,500,000 gallons in the 24 hours, and the position of the tanks is such that the effluent can be drained into the existing culvert and passed on to the low level area of the farm, as well as on to the middle and high levels, by means of pumps and the turbine, and on to the filter-beds. The raw sewage can also be run directly on to the farm, but generally it is to be treated with aluminoferric and milk of lime, and will then pass to settling-tanks. These are constructed on the "continuous flow" system, and the effluent will pass into the effluent carrier or into the filter-beds, while the sludge will gravitate from the tanks to a sludge-well and be pumped up to the sludge-beds. After being dried the sludge will be double dug into the ground. The contract for the tanks was carried out by Messrs. Cooke & Co. (Battersea), for the machinery by Messrs. Tangye (Birmingham), and for the carrier by Mr. A. G. Boys (Walsall).

STAINED GLASS AND DECORATION.

WINDOW, MICKLEHAM CHURCH, SURREY.—A three-light stained glass window has just been placed in position in the south aisle of Mickleham Church, Surrey. The subject is "Christ Blessing Little Children," and the window was designed and executed by Messrs. Percy Bacon & Brothers, London.

WINDOWS, CITY TEMPLE, LONDON.—Three large windows in the City Temple, Holborn, have just been filled with painted glass from the studio of Messrs. Charles Evans & Co., of London, W. One of them has been erected by subscription to commemorate Dr. Parker's one-thousandth Thursday morning sermon, and the subject chosen was "St. Paul preaching at Athens." The others illustrate "The Sermon on the Mount," and the Rev. I. De Kewer Williams. Each of the windows is surrounded by a wide border, and Classic canopies and bases.

FOREIGN AND COLONIAL.

FRANCE.—The Government has now decided to rebuild the store of scenery of the Opéra House and Opéra Comique on ground near the outskirts of Paris. Until that is ready, the portions of the Opéra decorations which have escaped the fire will be transferred to the Palais de l'Industrie.——MM. Besnard and Lerolle have been commissioned to execute the cartoons for the windows of the refreshment-room for the Council in Hôtel de Ville of Paris.——The fire at the Chicago Exhibition played sad havoc with the French exhibits. Besides a number of products of manufacture, all the objects sent over from the national pottery factories of Sèvres and Beauvais have been destroyed. Fortunately the paintings and sculpture have escaped entirely.——A bronze reproduction of M. Charpentier's group, "Les Lutteurs," has been commissioned by the State for the town of Avignon.——The model for the monument commemorating the defence of the Saint Quentin has just been placed, by way of experiment, on the Place de l'Hôtel de Ville in that town. The monument is designed by M. Theunissen.——The works ordered by the Government for the embellishment of the town of Oran will shortly be commenced, M. Cayla being the architect. ——The Department of Fine Arts has commissioned MM. Bayard de la Vingtrie, Hermant, and Bogino, to model busts of Admiral Duperré, Horace Vernet, and Admiral de Gueydon. These are intended to decorate the Government palace at Algiers.——The town of Pezènas is about to erect a monument to Molière.——M. Auguste Louzier, an architect of great merit, has been appointed Chevalier of the Legion of Honour, among the New Year's honours. M. Louzier is diocesan architect for Coutances and Sens. —— It is proposed to transfer the Paris observatory to an eminence situated between Viroflay and Juvisy. —— The Chamber of Deputies is to discuss in a few days the question of a loan of 117 million francs demanded by the Municipality of Paris for the diversion of the sewerage of the capital to the plain of Achères. It is expected that a counter proposition will be brought forward to carry away the sewage by a canal to the sea; a scheme which is estimated at 100 million francs.——Works have been commenced for the enlargement of the Pont de Neuilly, Paris, which is too small for its traffic.——It is proposed to build a consumption hospital at Castellacio, near Ajaccio, in Corsica, on the site of the present penitentiary, which is to be destroyed.——The Municipality of Bordeaux has opened a competition for the pictorial decoration of the grande salle de fêtes of the Mairie of that town. The competition is to be decided in Paris, where the drawings will be sent. ——The Government, in consideration of the immense number of artisans out of work, at present intends to undertake shortly the carrying out of some large works in Paris, partly with the view of finding profitable employment for a considerable proportion of the men out of work. It is expected that the preparation for the Metropolitan Railway will form part of these works.

GERMANY.—The old Christ Church at Berlin, which has been under repair for some time, was reopened by the Empress last week. The alterations and repairs, which were carried out by Professor Orth, cost over 2,000*l.*——The historical church of St. Mary, at Berlin, which has been lately undergoing structural repair, is to have fourteen new stained glass windows. Its fine old organ is to be repaired at a cost of about 1,000*l.*, and its two bells, dating from 1657 and 1720 respectively, are to be rehung.——An excellent perspective, showing the "Hofburg," in course of erection at Vienna, together with the two new museums lately completed in that city, has been exhibited at the Berlin Royal Academy, in memory of Herr von Hasenauer. The deceased professor was an honorary member of this Academy.——Seven designs have been submitted for the annual Schinkel Competition, which is an improvement on the small number regularly received for some years past. The subject set was "Design for a large Club-house."——The extensive additions to the new Imperial Bank buildings at Berlin are now approaching completion. One of the chief features of the extension is the underground strong room, the walls of which are 3 ft. thick, and covered on the inside with glazed tiles. Room is provided in the gangways for two trolleys abreast. The room will be lighted by electricity and heated by hot-water pipes.——Professor Anton von Werner has been re-elected President of the Society of Berlin Artists, and Herr Schwenke, an architect, will be the secretary for the coming session.——The two competitions for the designs of two new Lutheran churches at Düsseldorf have been decided. The first premiums were respectively awarded to Herr Weidenbach and Herr Käppler, both of Leipsic.——The Albert Theatre at Dresden which belonged to the Saxon Court, has been sold for 26,000*l.* The Royal Theatre Administration will now only have charge of Semper's Opera House, which is to be used for plays as well as operas.——The new bridge which has been thrown over the Vistula, near Fordan, in East Prussia, has a length of 1,300 mètres or about 4,264 ft. The bridge has a pair of rails for railway traffic, a carriage road of 20 ft. width, as well as two 5-ft. footways. Its purpose is, to a certain extent, military.——The well-known painter in water colours, Professor Karl Werner, has died at the age of eighty-five. He was born at Weimer and studied at Leipsic and Munich. His Egyptian sketches have been, from time to time, exhibited in English exhibitions.

SWITZERLAND.—The Municipal authorities at Berne have for some years been making some successful experiments in the erection of cheap artisans' dwellings on the "Wylerfeld" estate. The last Board of Works report showed that some fifty houses had been erected since the scheme was proposed in 1889, and that the ninety tenements thus provided had been let as soon as they were finished. The Municipality builds four types of houses, classified A, B, C, and D, the following particulars of which may be of interest. Those of class A cost about 2,980 fr. They are semi-detached and built of wood, the only objection raised to them being the smallness of the rooms and bad staircases. Class B, built of masonry, cost 4,000 fr., contain three rooms, and are free from the defects of class A. Class C contain the same number of rooms as class B, but larger, there being two tenements in every semi-detached house, each tenement costing 5,650 fr. Class D are similar to class C, but contain four rooms, costing 8,650 fr. per tenement.

MISCELLANEOUS.

THE SWEDISH IRON, STEEL, METAL, AND COAL INDUSTRIES.—From the report just issued on these industries in 1892 we learn that the production was as follows, the corresponding figures for 1891 being given in brackets:—Iron ore—353 mines—1,291,933 tons (985,255 tons); increase 31·1 per cent., the largest quantity ever raised in one year; miners employed, 7,564; output per man, 170·8 tons (158·3 tons); pig-iron—135 furnaces—485,664 tons (490,913 tons); decrease, 5,249 tons, or 1 per cent., average output per furnace a year, 3,174 tons (3,167 tons), diurnal, 12·35 tons (12·23 tons); forged and puddled pig, 316,577 tons; Bessemer and Martin ingots, 146,155 tons, &c.; unwelded iron and steel, 395,897 tons (380,500 tons), of which Lancashire blooms 217,685 tons, or 92·5 per cent.; Bessemer steel, 82,422 tons (92,985 tons); Martin, 76,556 tons (78,197 tons); decrease, Bessemer steel, 10,563 tons, or 11·4 per cent.; Martin, 1,641 tons, or 2·1 per cent.; bars, blows, billets, hoops, nails, plates, rails, tyres, &c., 293,036 tons (280,430 tons). The production of other kinds of ores and metals was:—Gold ore, 3,463 tons, increase, 29·2 per cent.; silver, 19,803 tons, increase, 31·6 per cent.; copper, 24,069 tons, increase 10 per cent.; zinc, 54,981 tons, decrease 10·7 per cent.; manganese, 7,332 tons, decrease 13·7 per cent.; gold (pure), 87,626 kilos., decrease 20 per cent.; silver, 5,210,640 kilos., increase 42·4 per cent.; lead, 798·6 tons, increase 167 per cent. cent. (largest output on record); copper, 745 tons, increase 37·1 per cent.; copper ware, 313 tons, increase 1·7 per cent.; brass, 302 tons, increase 3 per cent.; coals, 199,380 tons, increase 0·7 per cent., of which 57·74 per cent. were "best," 33·74 per cent. "seconds," and 7·79 per cent. "thirds." In addition there were raised from the coal deposits 123,096 tons of fireproof clay, made into tiles, bricks, sewage mains, fine earthenware, &c., as against 134,900 tons in 1891. In the mining and metal manufacturing industry are employed 1,861 motors—steam and water—of 60,353 h.-p.; 31,709 hands, *i.e.*, 65·8 per cent. in the iron mines, 13·2 per cent. in the collieries, and 21 per cent. in other mines, of whom 671 were women, mostly employed in the iron mines. Of the latter, 188 were under eighteen years of age. In the mines 65·4 per cent. worked above, and 34·6 per cent. below ground. There were sixty-one accidents, twenty-seven being fatal.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*School, Everton	Liverpool Sch. Bd.	.....	Mar. 3
*Infirmary	Walsall Union	.....	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Street-making and Sewerage	Runcorn Impt. Com	*Official*	Jan. 23
Goods' Warehouse, Felling, Durham	N. E. R. Co.	do.	Jan. 24
Hospital, Lightburn, Shettleston, near Glasgow	Wm. H. Hill	.....	do.
Offices, Breda, Alford, N.B.	.....	Matthews & Mackenzie	do.
*Additional Buildings at Offices	Plumstead Vestry	W. G. Forder	do.
*Making-up Roads, &c.	Hammersmith Vestry	H. Mair	do.
Five Cottages, Pontypridd	Isaac Williams	T. Rowland	do.
Public Baths, Falls-road	Belfast Corporation	Robt. Watt	do.
Additions to Star Hotel, Alnwick	G. S. Smart	Geo. Reavell, Jun.	do.
Telescopic Gasholder	Harrogate Gas Co.	T. Newbigging	Jan. 25
Roadmaking (two divisions)	Portsmouth U.S.A.	*Official*	Jan. 26
*Waterworks	Marlborough T. C.	do.	do.
Additions, &c. to St. Edmund's Boys School, Leek, Staffs.	Jas. G. Smith	.....	do.
Enlargements, &c. of School Buildings, Kirkstead	Pinxton (Derbyshire) School Board	*Official*	Jan. 27
School Buildings, Congleton	Managers of St. Stephen's Schools	.....	do.
School Extension, Adamstown	Cardiff School Board	James & Morgan	do.
Primitive Methodist Chapel, Bridge-street, Golborne, Lancs.	Walter Graham	.....	Jan. 29
*Works and Materials	St. Pancras Vestry	*Official*	do.
*Removal of Albion Hotel	Ramsgate Corporation	do.	do.
Main Sewerage and Outfalls, Northenden	Altrincham U.R.S.A.	J. M'Kenzie	Jan. 30
Steel Girder Bridge over River Conon, Glasgow	Mid-Ross District Committee C. C.	Crouch & Hogg	do.
Cast-iron Pipes (180 tons)	Stockport Corp.	A. M. Fowler	Jan. 31
*Granite Flints, Oil, &c.	Bexley Local Board	*Official*	do.
*Police Station, &c. Horsham	West Sussex Joint Com.	do.	do.
*Works and Materials	St. John's (Hampstead) Parish	do.	do.
Two Cottages, Werrington, Staffs.	Com. of Indus. Sch.	G. W. Bradford	do.
*Supply of Road Materials	Com. of H.M. Works	*Official*	do.
Works and Repairs to R. C. Chapel	Kilkenny Union	do.	Feb. 1

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Convertible Tables and Benches	Stroud Union	George E. Bond	Feb. 1
Farm Buildings, Blaircochrane, Lamancha, N.B.	Blackwood & Smith	.....	do.
*Manhole Covers, Flushing Boxes, Dust Pails	Bethnal Green Vestry	F. W. Barratt	do.
*Works and Materials	St. Marylebone Vestry	*Official*	Feb. 2
*Supply of Paving	do.	do.	do.
*Joinery Work, &c. for Shops	Blackpool Corp.	J. Wolstenholme	Feb. 3
*Broken Granite	Norfolk County Council	T. H. B. Heslop	do.
Retorts at Gasworks	Llandudno Improvement Commrs.	E. P. Stephenson	Feb. 5
*Higher Grade School	Salford School Board	Woodhouse & Willoughby	do.
*Battery and Drill Shed	Admiralty	*Official*	Feb. 6
Cast-Iron Pipes (17,000 tons)	Bradford Corp.	Jas. Watson	Feb. 9
School and Houses, Blackgate	West Ardsley (Yorks) School Board	A. Fawcett	Feb. 10
*Sewerage Works	Islington Burial Board	T. H. Barfield	Feb. 13
Buildings and Sewerage, Mount Sion-road	Radcliffe Local Board	*Official*	Feb. 21
*Erection of Proscenium, Supplying Seats, &c.	Llandudno Pier Co.	do.	No date
*136 to 400 Houses, Manchester	.....	J. H. Pemberton	do.
Four Houses, Blandford-gardens, Blackman-lane, Leeds	.....	W. A. Hobson	do.
School Buildings, Little Harwood, Lancs.	.....	J. W. Shorrock	do.
Road Metalling, Belfast	E. Braddell	.....	do.
Business Premises, &c. Lowther-street, Kendal	Wm. Glasgow	J. Thompson	do.
Co-operative Stores, South Kirby	Doncaster Mutual Co-operative Indus. Soc.	H. Athron	do.
Stables, &c. (large), Church-street, Burnley, Lancs.	.....	Chas. Parsons	do.
House, Hill End, Armley, Leeds	B. Mortimer	.....	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Building Inspector	Willesden Local Board	150*l.*	Jan. 29
*Clerk of Works	Harrogate Corp.	.....	Jan. 31
Surveyor	River Witham Drainage Commissioners	500*l.* and Offices	Feb. 8
*Water Engineer	St. Helens Water Com.	400*l.*	do.

Those marked with an Asterisk (*) are advertised in this number. *Competitions, p.* iv. *Contracts, pp.* iv., vi. viii., *and* ix. *Public Appointments, pp.* xviii. *and* xxi.

MARKET FOR TILES IN SYRIA.—According to a recent report of the French Consul-General at Beirut—tiles, the import of which last year amounted to 80,000*l.*, are obtained exclusively from Marseilles. Tiles are sold there at from 4*l.* 4s. to 4*l.* 8s. per 1,000. Italy has endeavoured to compete with Marseilles tiles, but has been unsuccessful. The import will continue to increase owing to the number of new buildings being constantly added to.

WATER SOFTENING AT ST. HELEN'S.—At a recent meeting of the St. Helen's Water Committee, a discussion took place as to the working of the new softening processes at the Softening Works, Brown Edge. The Medical Officer reported that his tests showed that the hardness had been reduced to an average of 14 deg., the individual tests varying from 13·5 to 15·5 deg. The deposit left in the pans after boiling had been changed from yellow to white and the iron in the water got rid of.

ALTERATIONS TO NO. 16, CORNHILL.—With reference to the list of tenders for this work, published in our last number, Messrs. Ashby Bros., who sent the lowest tender, ask us to say that the job was refused by them on account of the terms of contract and payment not being suitable.

ARBITRATION AWARD, SHEFFIELD.—The award of Mr. Joseph Smith, of Bradford, the umpire in the arbitration proceedings between the Sheffield Corporation and the devisees of George Badger Foster as to the value of property in High-Street, has just been issued. The Claimants asked 32,000*l.*, and the Improvement Committee offered 23,000*l.* The Commitee's offer was afterwards withdrawn, and before the arbitrators evidence was called on behalf of the Corporation to show that the real value was less than this amount. The owners on the other hand contended that 32,000*l.* was a fair price for compulsory sale. Mr. Joseph Smith, whose award is final, fixes the price at 22,056*l.*, or 944*l.* less than the price offered by the Corporation.

"A. A." LYRIC CLUB.—This club gives a "Cinderella" dance at the Portman Rooms, in Baker-street, on Tuesday, the 23rd. Tickets can be obtained from the secretaries, Mr. John Murray, 7, John-street, Adelphi, and Mr. G. A. Lansdowne, 5, Warwick-street, Charing Cross. Only a limited number of tickets will be issued.

RESIGNATION OF THE WATER ENGINEER OF ST. HELENS.—At the monthly meeting of the Water Committee of the St. Helens Corporation on the 10th inst., the water engineer (Mr. D. M. F. Gaskin, M.I.C.E.) submitted his resignation, owing to his appointment as Water Engineer of Nottingham at a salary of 600*l.* per annum. The resignation was accepted, and Mr. Gaskin said he had arranged with the chairman of the Water Committee at Nottingham to be allowed to render assistance to St. Helens if called upon.

IMPROVEMENTS AT HARROGATE.—The Harrogate Town Council have decided to spend 63,000*l.* in the erection of a bathing establishment, winter gardens, pump-rooms, &c. The cost of the scheme was, in the first instance, put down at 50,000*l.*, but the tenders show an advance of 15,000*l.* upon this sum. In addition to this, 8,000*l.* is to be spent upon the repurchase and the laying out of the Crescent Estate and improvements at the Victoria Baths; 3,000*l.* for house, greenhouse, and improvements to the Bog Valley Gardens; 2,500*l.* for farmhouse and works on the Corporation farm; and 5,000*l.* will be required for paying off the cost of the watercourse and sewer in Low Harrogate, and sewers in Knaresborough and Otley Road; 2,500*l.* is required for street improvements; 3,000*l.* for purchase and provision of a town's yard; 250*l.* for a public lavatory, 1,000*l.* for sanatorium; 700*l.* for steam fire-engine and fire-escape, and 700*l.* for alterations at the market. The purchase of the Stray gates has cost 12,000*l.*, and the new Act of Parliament 3,000*l.*, making a total of 110,000*l.* to be provided for during the next four or five years.

PUBLIC WORKS IN MANCHESTER.—The Manchester Corporation are seeking powers to borrow 250,000*l.* for the purpose of extending the gasworks of the city, and a Local Government Board inquiry was held on Tuesday with respect to the matter. The Lord Mayor mentioned that the Corporation had spent 2,000,000*l.* on Thirlmere Waterworks and 750,000*l.* on sewerage works, and over and above this had lent 5,000,000*l.* to the Ship Canal Company.

THE CARRON COMPANY.—The employés of the Carron Company dined together for the first time at the "New Corn Exchange Tavern," Mark-lane, on the 16th inst. Mr. D. W. McInnes, the London manager, presided, and Mr. M. Robertson, the wharfinger, filled the vice-chair.

PARTNERSHIP ANNOUNCEMENT.—Messrs. Dunn & Hansom, architects, of Newcastle-on-Tyne, have taken into partnership Mr. W. Ellison Fenwicke, who has been associated with them for fourteen years, and in future their practice will be carried on under the style of Dunn, Hansom, & Fenwicke.

BUILDING CONSTRUCTION CLASS, LEEDS SCHOOL OF ART.—In connexion with the Building Construction Class of the Leeds School of Art, a presentation of the awards made by the Science and Art Department, South Kensington, took place on the 8th inst. Councillor Graham addressed the students and presented the prizes. The class, which is taught by Mr. C. B. Howdill, A.R.I.B.A., numbers about eighty, and the past year's work is regarded as very satisfactory, the results showing three successes in the honours stage, one pupil, Mr. T. D. Brooks, being placed second in the United Kingdom, and Messrs. Tomlinson and Malkin being bracketed fifteenth.

CAPITAL AND LABOUR.

THE BUILDING TRADE IN LEICESTER.—According to the *Leicester Mercury*, in two branches of the building trade in Leicester steps are being taken with a view to an increase of wages, to take effect in April next. The officials of the Carpenters and Joiners' Society have sent to the representatives of the Builders' Association a proposal involving an increase of ½d. per hour on the wages at present paid, with other alterations, especially with regard to the payment for overtime. On behalf of the labourers a demand has been made for an advance of 1d. per hour.

MEETINGS.

FRIDAY, JANUARY 19.

Architectural Association.—Mr. J. Daymond on "Wood Carving"—practically illustrated. 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. William G. Wales on "Discharging and Storing Grain." 7.30 p.m.

SATURDAY, JANUARY 20.

Queen's College, Cork.—Mr. Arthur Hill on the "History of Architecture"—II. 3 p.m.

MONDAY, JANUARY 22.

Surveyors' Institution.—Discussion on Mr. E. J. Harper's paper on "Trade Claims." 8 p.m.

London Institution.—Mr. T. Hodgkin on "The Roman Wall in Northumberland"—illustrated. 5 p.m.

Society of Arts (Cantor Lectures).—Mr. Frank Clowes on "The Detection and Measurement of Inflammable Gas and Vapour in the Air." 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. J. Lane on "English Cathedrals." 7.30 p.m.

TUESDAY, JANUARY 23.

Architectural Association.—Cinderella Dance (Portman Rooms, Baker-street). 7.30 p.m.

Institution of Civil Engineers.—Paper by the late Percy Rickard on "The Tunnels of the Dore and Chinley Railway." 8 p.m. Students' Visit to the Cable Depot of the London Tramways Company, Streatham Hill. 2.45 p.m.

Society of Arts (Foreign and Colonial Section).—Captain Charles Rolleston on "Morocco and its Races." 8 p.m.

Glasgow Architectural Association.—Paper by Mr. M. Stark entitled, "Some Thoughts on Architectural Design." 8 p.m.

WEDNESDAY, JANUARY 24.

Society of Arts.—Mr. G. Herbert Thrupp on "American Carriages." 8 p.m.

Northern Architectural Association.—7.30 p.m.

THURSDAY, JANUARY 25.

Institution of Electrical Engineers.—Paper by Mr. W. H. Preece, K.C.B., F.R.S., entitled "Notes of a Trip to the United States and to Chicago, 1893." 8 p.m.

Society of Antiquaries.—8.30 p.m.

FRIDAY, JANUARY 26.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. J. F. J. Sykes on "Elementary Physics." I. 8 p.m.

SATURDAY, JANUARY 27.

Queen's College, Cork.—Mr. Arthur Hill on "The History of Architecture." III. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

22,687.—ADJUSTABLE SCAFFOLD: *T. H. Winbush.*—According to this invention, sliding-irons are fixed along the sides of a ladder, and fastening hooks with bolts, which, when bolted up, form a slight scaffold, safe and secure.

22,784.—ARTIFICIAL STONE, &c.: *J Gaskell.*—From the waste of glass-works or the products wasted in grinding and polishing glass, stone in the form of blocks, slabs, tiles, or bricks is produced. To assist and expedite the process of manufacture a flux of barytes or some suitable material is used.

2,655.—WHITEWASH, &c., BRUSHES: *A. L. Burrow.*—According to this patent, to make the handles more secure from coming to pieces a hole is bored in the flat side of the handle, and copper wire, confining the bristles or hair, is twisted in.

3,083.—ROOFING TILES: *W. Shears.*—Lugs or beads are made upon the tiles, which form the subject of this invention, and by using them it is claimed that a perfect roof is formed, the shaped bead or ledge on the tile in combination with the shaped ends of the tiles making a joint which excludes draught and rain or snow.

5,871.—POCKET-PIECES OF SASH-FRAMES: *W. Osment.*—According to this invention instead of cutting out the pocket of the sash-frame by hand, a machine with four knives cuts out uniformly and exactly a shaped pocket piece.

19,016.—EXHIBITION STRUCTURES: *G. M. Wheeler.*—A radial plan provides for so locating the various exhibits or groups of exhibits that the groups present their relation, correlation, and order of development.

20,899.—DRAIN-PIPES: *G. Underwood.*—To assist in joining the pipes, on one end is fixed a socket, and on the other a rib, so arranged that when two of the pipes are placed together a double annular space is formed into which cement is introduced.

21,172.—JOINER'S CRAMP: *J. C. Wilson.*—The cramp which forms the subject of this invention, has a bar of T-section, on which the jaws are fitted to slide and a slot to receive the clamping screw, which works through a nut secured to the end of the bar.

21,274.—SEWERS: *G. Law.*—This patent consists of a cast-iron manhole cover and frame, with a galvanised iron detachable dirt bucket. Holes are formed in the cover, which are opened and closed by a key inserted in a central opening.

NEW APPLICATIONS FOR LETTERS PATENT.

JANUARY 1.—8, J. Blandford, Chimney Pot.—23, D. Mitchell, Flushing Water-closets.—71, W. Hyatt, Manufacture of Paint.—73, O. Stifft, Brick Kilns.

JANUARY 2.—83, J. Barber, Braces for Cabinet-makers, Carpenters, Joiners, &c.

JANUARY 3.—167, J. Bell, Self-acting Safety Water-closet, Water Regulator, and Waste Preventer.—180, C. Fitch, Nails.—181, J. Mordaunt, Metal Nails.

JANUARY 4.—213, G. Oulton, Flushing Closet pans, &c.—238, A. Jones, Chimney Pots or Cowls for Chimney and Ventilating Shafts.

JANUARY 5.—265, G. Oulton, Baths, Lavatory Basins, &c.—270, A. Read, Fastening and Unfastening Window Beads.

JANUARY 6.—342, C. Hengst and C. Fox, Union for Pipes and Tubes.—343, J. Blakesley, Syphon Cisterns.

PROVISIONAL SPECIFICATIONS ACCEPTED.

21,292, A. Patrick, Manufacture of Portland Cement, Pigments, &c.—22,170, H. Levick, Fastenings for Windows, &c.—22,265, W. Monro, Earthenware Drain Pipe.—22,613, J. Holdcroft, Potters' Kilns.—23,382, J. Pollock, Securing Windows, Casements, Doors, &c.—24,214, D. Murrow and A. Taylor.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

3,682, J. Symington, Pipe Couplings.—4,454, C. Kite and W. Barns, Bolts.—4,560, G. Chapman, Ventilators.—4,737, L. Nathan, Artificial Marble.—17,142, L. Grote, Artificial Stone.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JANUARY 10.—By *W. Branson:* 67, High-st., Notting Hill, the lease for 14 years, and goodwill, 55*l.*—By *Beard & Son:* 233, North End-rd., Walham-green, u.t. 79 yrs., g.r. 8*l.*, r. 110*l.*, 1,550*l.*; 1, Eelbrook Pavement, Fulham, u.t. 94 yrs., g.r. 6*l.*, r. 60*l.*, 800*l.*

JANUARY 11.—By *C. C. & T. Moore:* 57, Gough-st., Poplar, u.t. 55 yrs., g.r. 3*l.*, 190*l.*; 12, Holford-st., Mile End, u.t. 35 yrs., g.r. 3*l.*, 285*l.*; 20, Harley-st., Bow, u.t. 32 yrs., g.r. 2*l.* 10s., r. 36*l.*, 380*l.*; 29 to 35 odd, Beechcroft-rd., Leytonstone-rd., u.t. 79 yrs., g.r. 12*l.*, 500*l.*—By *W. J. Newell:* 92 to 100 even, Grove-st., Deptford, u.t. 70 yrs., g.r. 25*l.*, r. 175*l.* 14s., 780*l.*; a f. chapel, Charles-pl., r. 20*l.*, 385*l.*; a plot of f. land, Overstrand-rd., Cromer, 45*l.*; "Suffield Pk. Estate," two plots of f. land, 165*l.*; "The Mason's Arms," Church-st., Greenwich, f., r. 25*l.*, 995*l.*

JANUARY 12.—By *A. Barton:* 10, Calcott-rd., Brondesbury, u.t. 93 yrs., g.r. 8*l.* 8s., 485*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street.; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	9/0/0 0/0/0
Teak, E.I.	load	9/10/0 15/10/0
Sequoia, U.S.ft.cu		2/3 2/6
Ash, Canada load		2/10/0 3/15/0
Birch, do.		2/10/0 3 10 0
Elm, do.		3/5 0 4/10 0
Fir, Dantsic, &c.		1/5/0 2/10/0
Oak, do.		2/15 0 5.0/0
Canada		5/10/0 7/0/0
Pine, Canada red		2/15/0 3 5/0
Do. Yellow		2/5/0 4/10/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		2/5/0 4/10/0
Odessa, crown		2/5/0 4/10/0
Deals, Finland 2nd & 1st std	100	8/0/0 10/10/0
Do. 4th & 3rd		7/10/0 8/0/0
Do. Riga		7/10/0 9/0/0
St. Petersburg, 1st yellow		10/0/0 13/10/0
Do. 2nd yellow		8/0/0 9/0/0
Do. white		8/10/0 11/0 0
Swedish		8/0/0 16,0,0
White Sea		8/0/0 16/10/0
Canada, Pine 1st		22/10 0 29/10/0
Do. do. 2nd		17/0/0 18/10/0
Do. do. 3rd, &c.		7/10/0 10/10/0
Do. Spruce, 1st		9 0/0 11/0/0
Do. do. 3rd & 2nd		6/10/0 7'15/0
New Brunswick		6/0,0 7/5,0
Battens, all kinds		3,0/0 15/0/0
Flooring boards, sq., 1 in. prep. 1st		0/10/6 0/15/0
Do. 2nd		0/7/6 0/13/0
Other qualities—		0 5/3 0/7,0
Cedar, Cuba	ft.	/4 /4½
Honduras, &c.		/3½ /4¼
Mahogany, Cuba		/3¼ /6
St. Domingo, cargo av.		/3 1/6
Mexican do. do.		/3¾ /4
Tobasco do. do.		/3¾ /6
Honduras do.		/4 /5½
Box, Turkey	ton	4/0/0 13/0/0
Rose, Rio		8 0/0 20/0/0
Bahia		7/0/0 18/0/0
Satin, St. Domingo		0,0/6 0'1/3

TIMBER (*continued*).		
Satin, Porto Rico		0/0/7 0/1/6
Walnut, Italian		0/0/3½ 0/0/7

METALS.		
Iron—Pig, in Scotland	ton	2/2/11 0/0/0
Bar, Welsh, in London		5/17/6 6/0/0
Do. do. at works in Wales		5/7/6 5/10/0
Do. Staffordshire, in London		6/0/0 6/10/0
COPPER—British cake and ingot		44/5/0 44/15/0
Best selected		45/0/0 45/10/0
Sheets, strong		53/10/0 0/0/0
Chili, bars		41/16/3 42/1/3
YELLOW METAL	lb	0/0/4½ 0/0/5
LEAD—Pig, Spanish	ton	9/6/3 9/8/9
English com. brands		9/7/6 9/10/0
Sheet, English, 6 lbs. per sq. ft. and upwards		11/0/0 0/0/0
Pipe		11/10/0 0/0/0
ZINC—English sheet	ton	19/10/0 0/0/0
Vieille Montagne		20/0/0 0/0/0
TIN—Straits		71/10/0 72/0/0
Australian		71/15/0 72/5/0
English Ingots		77/0/0 77/10/0
Banca		77/0/0 77/10/0
Billiton		74/0/0 75/0/0

OILS.		
Linseed	ton	20/7/6 20/12/6
Cocoanut, Cochin		33/10/0 0/0/0
Do. Ceylon		25/5/0 0/0/0
Palm, Lagos		25 0/0 0/0/0
Rapeseed, English pale		22/15/0 23/0/0
Do. brown		21/5/0 0/0/0
Cottonseed ref.		20/15/0 22/10/0
Oleine		22/0/0 24/0/0
Lubricating, U.S.		4/0/0 5/0/0
Do. refined		5/0/0 12,0/0
TAR—Stockholm	barrel	0/19/0 1/0/0
Archangel		0/12/6 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.*]

BRADFORD (Yorks).—For the construction and maintenance for twelve months of a main aqueduct from the river Nid to Chellow Heights (3½ miles), with branch aqueducts (5¼ miles), and incidental work, for the Corporation. Mr. J. Watson, C.E., Town Hall, Bradford:—

Morrison & Mason, Ltd., 21, Clyde-place, Glasgow £386,259 7 10

BROMLEY (Middlesex).—For the erection of casual wards, St. Leonard-street, for the Poplar Union Guardians. Messrs. Walter A. Hills & Sons, architects, 149, Bow-road, London, E.:—

J. Holland	£13,185	Wm. Shurmur	£12,780
W. Watson	13,180	W. Maddison	12,739
B. E. Nightingale	12,939	Harris & Wardrop	12,469
F. J. Coxhead	12,787	Mowlem & Co.	12,293

[Architect's estimate, £12,500.]

BURNHAM (Somerset).—Accepted for making road, footpath, drains, &c., Poplar estate, for Mr. H. F. Rose. Mr. Chas. S. Leech, surveyor, Boulevard, Weston-super-Mare:—

A. Harding, Burnham ..... £1 9 6 per yard.

CATFORD.—Accepted for repairs, &c., to Nos. 6 & 7, Percy Villas, Brownhill-road, for Mr. W. Kipping:—

Maxwell Bros. £138 0 0

COLCHESTER.—For walling or fencing in an extension of 12 acres to the Colchester Cemetery, for the Colchester Burial Board. Mr. Chas. E. Butcher, architect, 3, Queen-street, Colchester:—

	Estimate, No. 1.		Estimate, No. 2.	
	For a brick wall.	For Portland cement, mortar, and concrete.	Iron fence in place of wall on south boundry.	Extra, if Portland cement, mortar, and concrete.
G. Bowles	£1,397	£30	£1,247	£18
H. Everett & Son	1,360	135	1,160	80
F. G. Bloice	1,320	233	1,250	139
C. E. Orfeur	1,300	166	1,295	98
F. Shead	1,295	173	1,278	100
F. Dupont	1,270	160	1,258	94
G. Dobson	1,250	110	1,140	65
W. Chambers	1,240	188	1,120	109
R. Beaumont	1,236	175	1,185	96
A. Diss	1,115	216	1,018	130

[All of Colchester.]

DOVER.—For the erection of offices for licensed porters, Council House-street, for the Town Council. Mr. Walter Thomas, Borough Engineer:—

Austen & Lewis	£357 0 0	J. J. Hall, High-street, Dover (accepted)	£314 7 6
G. Lewis & Sons	325 0 0		

GATESHEAD.—For paving, cementing, &c., the western half of South Pine-street. Mr. J. Bower, C.E., Borough Surveyor, Town Hall, Gateshead:—

Paving.

J. J. & J. Robson	£183 11 0	J. W. Robson	£163 18 0
G. E. Simpson	175 19 1	W. Cumming, New Gateshead*	153 17 9½
J. Wardlaw	165 12 3		

* Accepted.

Cementing.

G. E. Simpson	£34 7 6	T. Rule, Jun., Gateshead (accepted)	£29 17 0
W. Nevison	29 17 6		

GREAT YARMOUTH.—For the erection of Electric Lighting Central Station. Mr. J. W. Cockrill, Borough Surveyor. Quantities by the Borough Surveyor:—

M. Barnard	£3,058 0	F. Grimble	£2,800 0
R. Eastoe	3,346 17	G. W. Beech	2,768 10
G. T. Flaxman	3,124 10	J. F. W. Bray, Yarmouth*	2,696 0
T. Howes	3,093 0	W. Cork	2,510 0
G. Beckett	2858 10	J. W. Rand (withdrawn)	2,485 0
Carter & Wright	2,817 0		

* Accepted.

HARROGATE.—For additions, &c., to "Claremont" Hotel, Harrogate (Yorks.), for Mrs. M. Edgar. Mr. T. Butler Wilson, architect, Leeds and Harrogate:—

Mason and Brickwork.—C. Dawson, Harrogate	£1,287 1 3
Joiner.—T. Linskill, Harrogate	1,200 18 8
Slater.—J. Shepherd, Harrogate	77 10 0
Plumber.—Slater & Son, Leeds	316 7 10
Plasterer.—Wm. Pennington, Leeds	221 9 8

HAYWARD'S HEATH (Sussex).—For proposed new sewer at the County Lunatic Asylum, Hayward's Heath. Mr. H. Card, County Surveyor, Lewes:—

Jno. Neave	£2,848	W. H. Wheeler	£1,255
Holman & Co.	2,089	M. S. Kitteringham	1,193
G. E. Chapman	1,694	D. Porter	1,175
Box & Turner	1,595	W. Meats	1,135
Edward Steer	1,499	H. J. Smith, Stone-street, Maidstone*	1,096
J. R. Hunt	1,404		
P. Peters	1,300		

* Accepted.

ILFORD (Essex).—For making-up, levelling, kerbing, paving, &c., Clement's and other roads, for the Local Board. Mr. P. Watkins, Surveyor, Ilford. No quantities:—

Langden & Crawford	£4,500 0 0	W. Griffiths	£4,335 0 0
Jno. Jackson	4,439 0 0	D. T. Jackson	3,889 0 0
Thos. Adams	4,345 0 0	R. Stroud, Ilford*	3,532 14 6

* Provisionally accepted.

KILWINNING (N.B.).—For the erection of walls, levelling grounds, pathways, drainage, &c., at the Cemetery, for the Parochial Board. Quantities by Mr. Armour, architect, Parochial Board Office, Kilwinning:—

Andrew Beattie	£826 5	William Brown, Stevenston*	£542 13
J. Armour & Son	790 0		
John Young	699 0		

* Accepted.

LEAMINGTON.—For the construction of a service reservoir in brick and concrete, of 100,000 galls. capacity, laying pipes, &c., for the Corporation. Mr. De Normanville, Corporation Engineer, Town Hall, Leamington:—

Holden & Hipwell	£2,010 0 0	Jenkins & Sons	£1,460 0 0
T. C. Caffin	1,956 0 0	R. Bowen, Leamington*	1,492 0 0
Wood & Currie	1,741 11 3	C. A. Walker	1,423 10 0
J. Biggs	1,572 0 0		
Porter & Harrison	1,569 0 0		

* Accepted.

LONDON.—For sinking and boring an artesian well (310 ft. in depth), Lower Market-street, Woolwich, for the Local Board. Mr. H. H. Church, architect, William-street, Woolwich:—

Batchelor	£2,909 2	Tilley & Sons	£2,156 0
Isler & Co.	2,826 0	Timmins & Sons	1,671 9

LONDON.—For alterations and additions to receiving wards, new workshops, &c., Cornwallis-road Workhouse, for the Guardians of the Poor, St. Mary, Islington. Mr. William Smith, architect:—

Brass & Son	£1,747	Laughland	£1,376
Lovett	1,700	Huntley Bros.	1,357
McCormick & Son	1,678	Ward & Lamble	1,355
Wells	1,497	Hockin	1,345
Larter & Son	1,479	Beech	1,267
Ballard	1,476	Stevens Bros.	1,275
McFarlane	1,452	Peck*	1,257
Ruffell	1,429		

* Accepted.

LONDON.—For alterations and additions to "The Woodberry Hotel," Seven Sisters-road, N., for Mr. W. R. Coysh. Mr. J. E. Pinder, architect, Bridge House, Tottenham, N.:—

F. Voller	£1,266	Knight & Son	£1,195
Dearing & Son	1,203	Green & Smith (accepted)	1,121

LONDON.—For the erection of engine and pump room, Lower Market-street, Woolwich, for the Local Board. Mr. H. H. Church, architect, William-street, Woolwich. Quantities by Mr. Walter Whincop:—

Lorden & Sons	£514 0	Battley, Sons, & Holmes	£464 0
H. L. Holloway	473 0	London Amalgamated Builders' Society	421 1
Woolwich District Co-operative Building Society	466 0		

LONDON.—For alterations and repairs to No. 10, Vandon-street, Westminster. Mr. Alfred Broad, architect, 27, Dingwall-road, Croydon:—

G. E. Bryan & Son	£231	E. J. Saunders	£152
J. Ball	212	D. W. Barker, Croydon*	139
W. Smith	213		

* Accepted.

LONDON.—Accepted for alterations and repairs to White House, Westwood Park, Forest Hill, for Mr. W. Morgan:—

Thos. Watson, Dulwich £230 0 0

LONDON.—Accepted for sanitary work at Linden Grove Congregational Church, Peckham, for Rev. J. C. Postans:—

Maxwell Bros. £103 0 0

LONDON.—Accepted for alterations and repairs at No. 16, St. John's Wood Park, N.W., for Mrs. Smithers:—

Maxwell Bros. £365 0 0

LONDON.—Accepted for fitting up offices at Oxford Court, Cannon-street, &c., for the National Telephone Company:—

Maxwell Bros. £120 0 0

LONDON.—Accepted for alterations and repairs at 79 and 81 Leonard-street, Shoreditch, for Messrs. R. King & Co.:—

Maxwell Bros. £219 0 0

LONDON.—Accepted for new mahogany fittings and electric lighting at St. Paul's Wharf, Upper Thames-street, E.C., for Messrs. Lever Bros. Mr. W. Owen, architect:—

	Fittings.	Electric lighting.
Maxwell Bros.	£103 0 0	£75 0 0

LONDON.—Accepted for sanitary work and repairs at Colvestone-Crescent, Dalston, for the National Telephone Company. Mr. W. E. Deane, architect:—

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POOLE.—For heating the Guildhall by hot water, for the Town Council. M. J. Elford, Borough Surveyor, King-Street, Poole:—

T. Williams & Co.	£153 10	Boone & Giblett	£117 10
W. Parham	143 17	Bayley & Sons	111 10
W. Wheeler	110 0	Bacon & Co., Poole*	99 10

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POOLE.—For re-making the Queen's Grove-road, Parkstone, for the Town Council. Mr. Jno. Elford, Borough Surveyor, King-street, Poole :—

W. Guy	£189 2	T. C. Rigler	£156 0
G. T. Budden	157 0	W. Brixey (accepted)	139 0

SWINDON.—For sewering, metalling, channelling, &c., private streets, for the Swindon New Town Local Board. Mr. H. J. Hamp, surveyor, Regent Circus, New Swindon :—

Butterworth-street.

J. Williams, Victoria-street, Swindon £328 0 0

Havelock-street.

T. Winchcombe, Wroughton-road, Swindon 55 0 0

Whiteman's-street.

T. Winchcombe, Wroughton-road, Swindon 540 0 0

SWINDON.—For new Sunday-school, Swindon, Wilts :—

Wm. Chambers	£2,996 10	Geo. Wiltshire	2,175 0
Thos. Barrett	2,275 10	Thos. Colbourne	1,840 0
Chas. Williams	2,217 10	R. J. Leighfield*	1,768 15

* Accepted.

[All of Swindon.]

WALTON (Cumberland).—For the erection of a stone bridge over the River King, Dove Cote Ford, for the Brampton Highway Board. Mr. G. J. Bell, County Surveyor, The Courts, Carlisle. Quantities not supplied :—

Thomas Telfer, Langholm, Dumfriesshire £963 0 0

[Surveyor's estimate, £950.]

WOLVERHAMPTON.—For the erection of an electric-lighting station, Commercial-road, for the Corporation. Mr. A. Paull Brewitt, architect, Devonshire-chambers, Wolverhampton. Quantities by the architect :—

Henry Willcock, Wolverhampton £4,985 0 0

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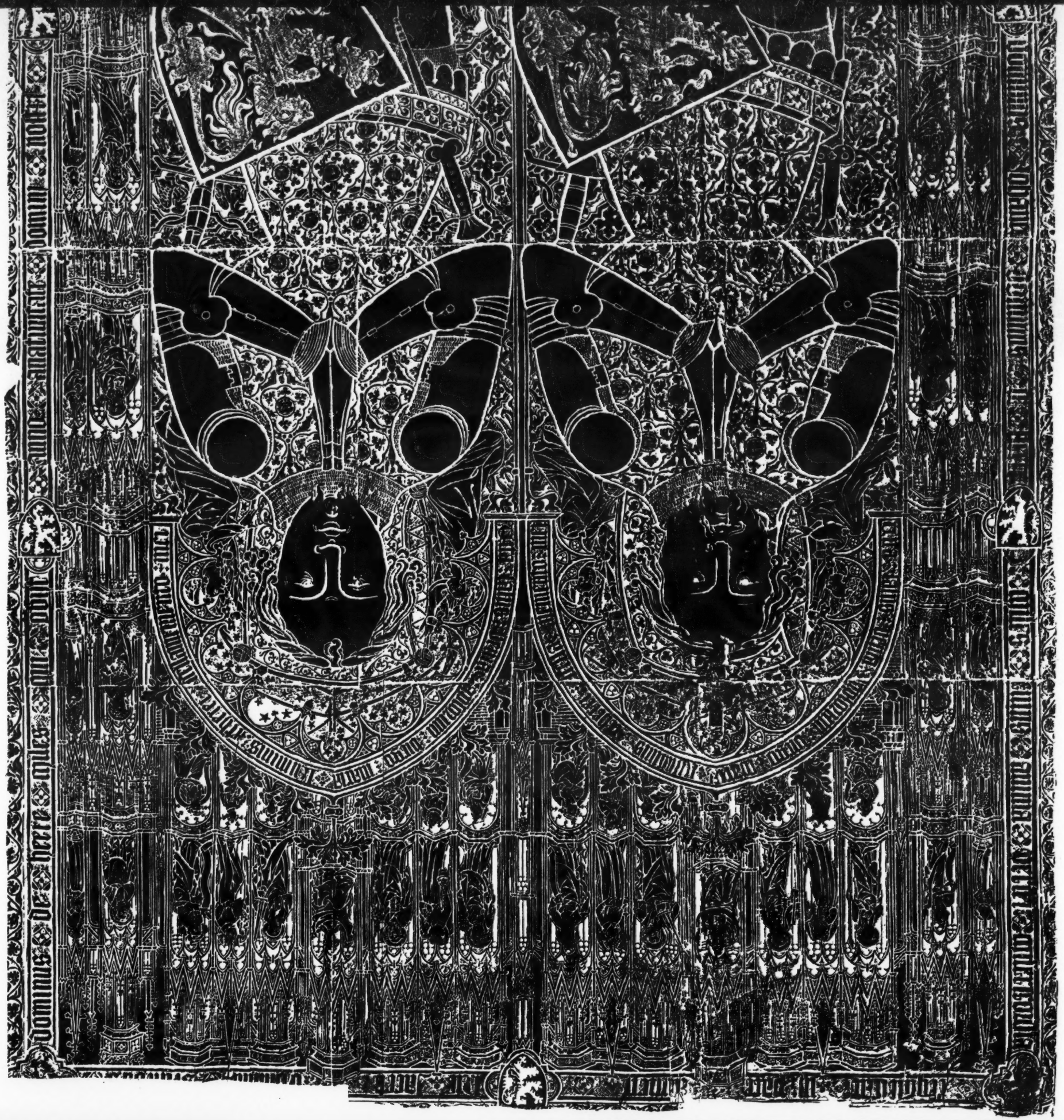

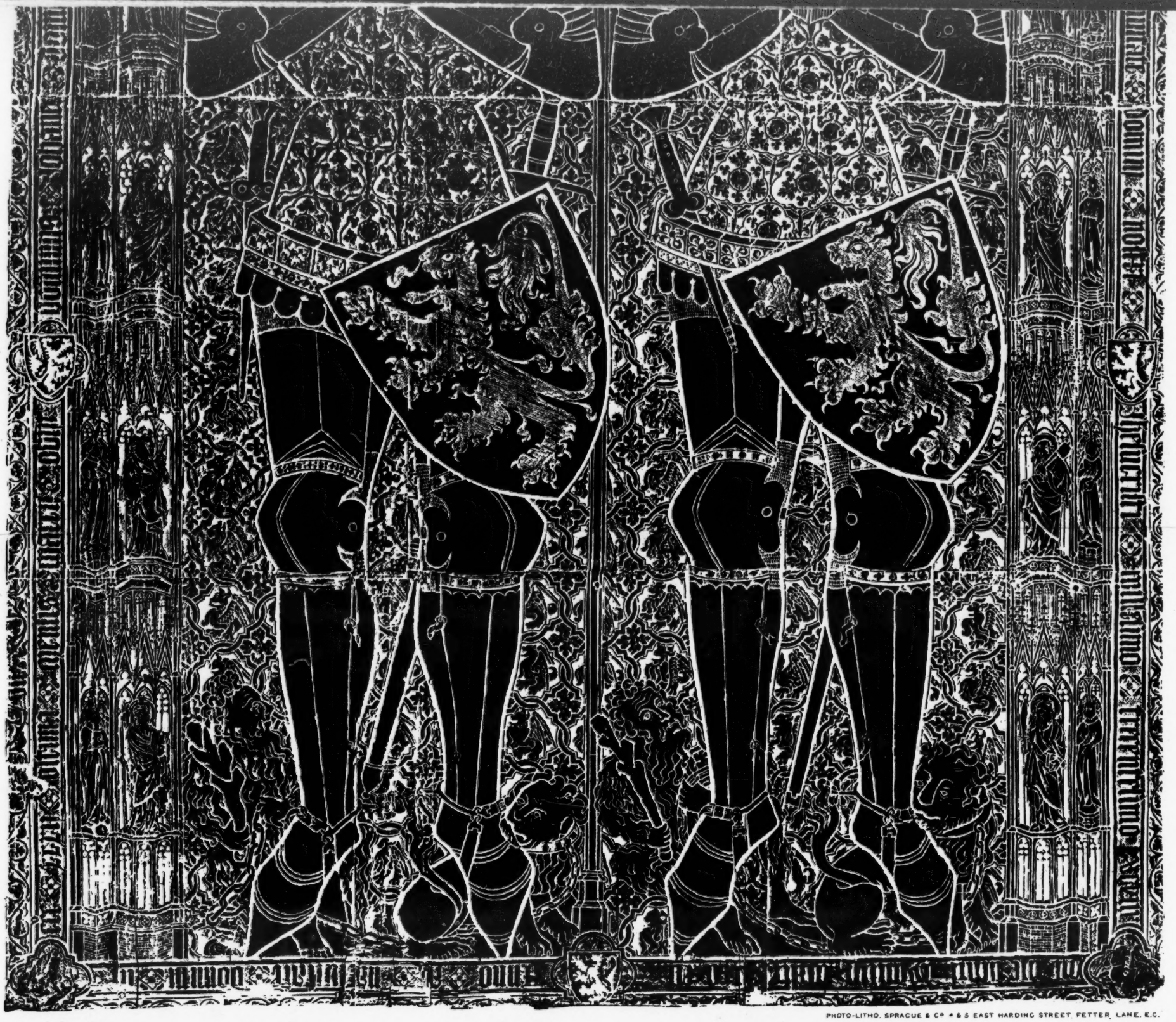

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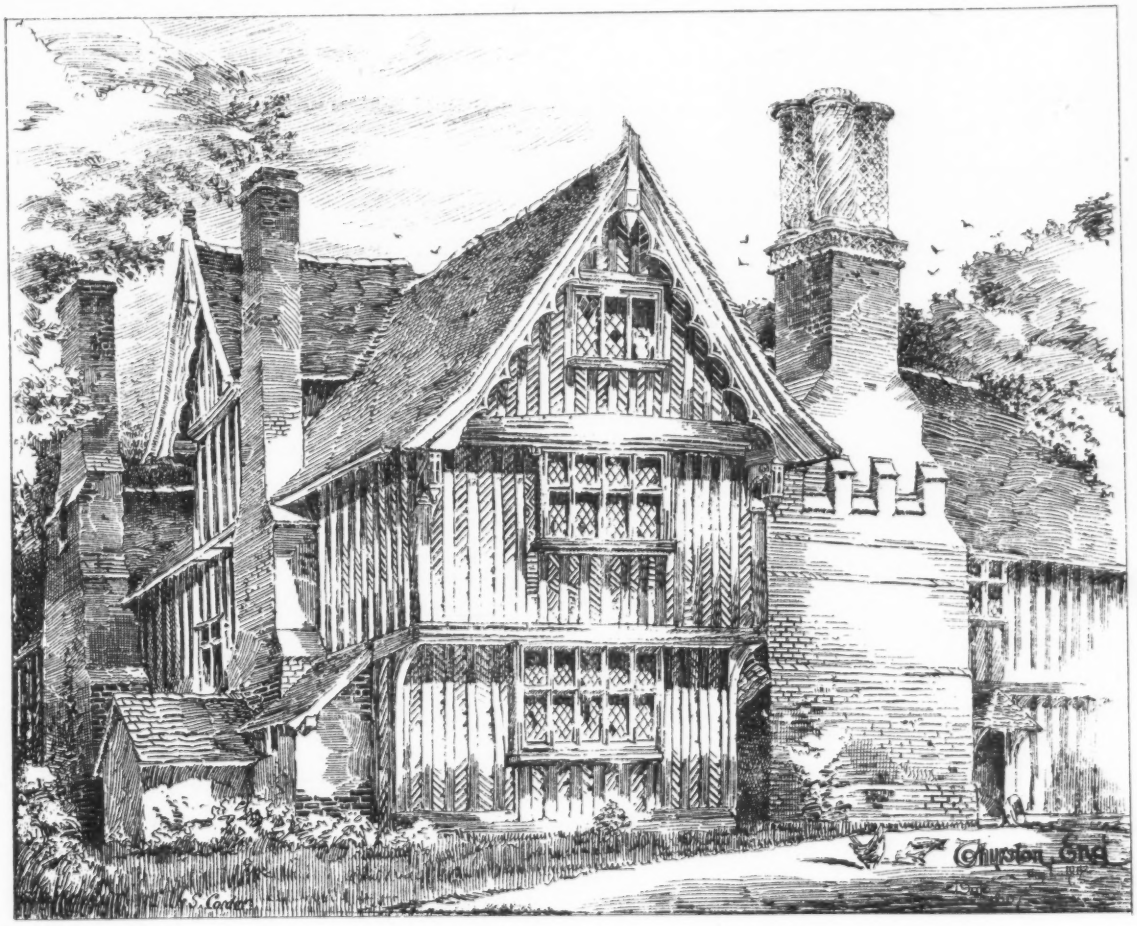

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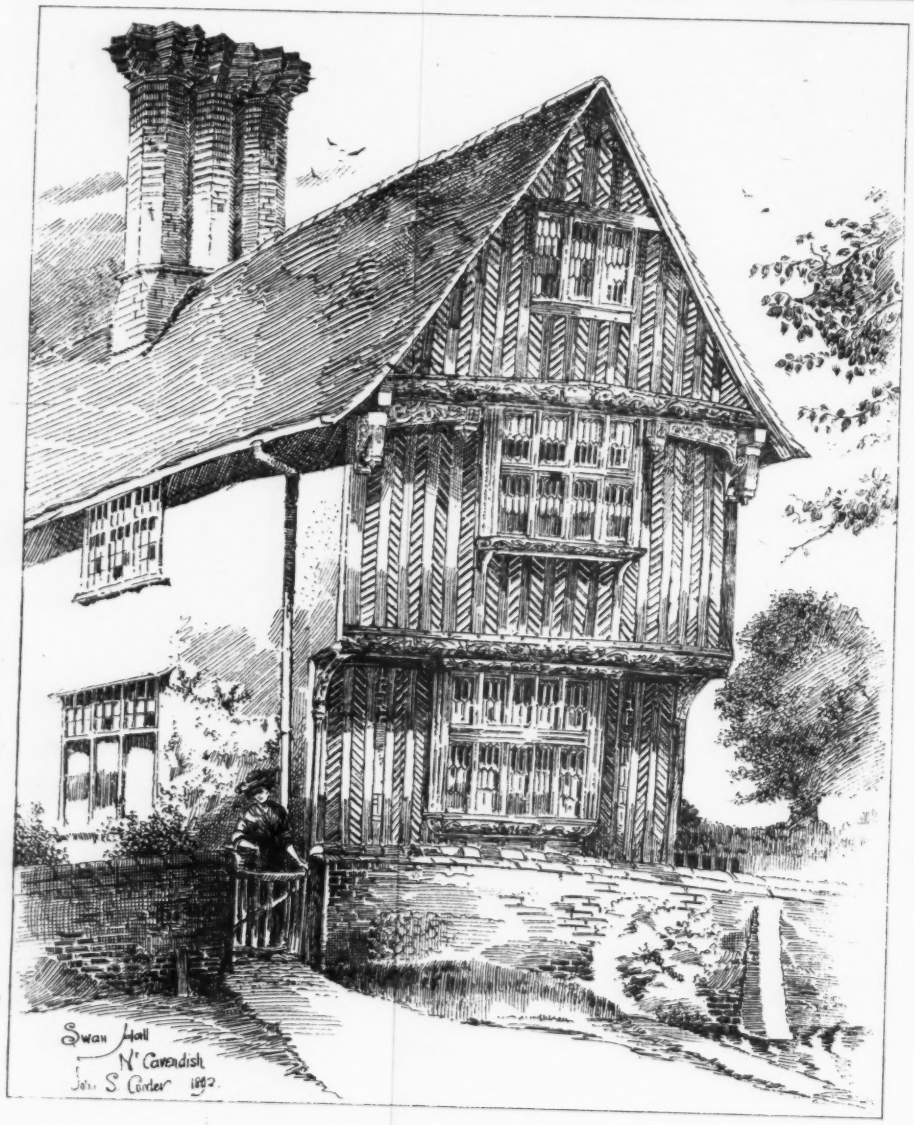

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